ENVIRONMENTAL STEWARDSHIP PLAN
FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE
U.S. Border Patrol El Centro Sector, California

U.S. Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol

May 2008

COVER SHEET

ENVIRONMENTAL STEWARDSHIP PLAN FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE U.S. BORDER PATROL EL CENTRO SECTOR, CALIFORNIA

Responsible Agencies: U.S. Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP).

Coordinating Agencies: Bureau of Land Management (BLM), El Centro Field Office; U.S. Army Corps of Engineers (USACE)-Los Angeles District; U.S. Fish and Wildlife Service (USFWS); and the United States Section, International Boundary and Water Commission (USIBWC).

Affected Location: U.S./Mexico international border in Imperial County, California.

Project Description: The Project includes the construction, operation, and maintenance of tactical infrastructure to include primary pedestrian and vehicle fence, lighting, and associated patrol and access roads along approximately 44.6 miles of the U.S./Mexico international border within the USBP El Centro Sector, California. The Project will be implemented in six discrete sections. Individual sections will range from approximately 2.4 to 19.3 miles in length.

Report Designation: Environmental Stewardship Plan (ESP).

Abstract: CBP plans to construct, operate, and maintain approximately 44.6 miles of tactical infrastructure, including three discrete sections of primary pedestrian fence, lighting, and patrol roads; one section of primary vehicle fence and patrol roads; one of primary pedestrian fence and patrol roads, one section of lighting; and access roads along the U.S./Mexico international border in the USBP El Centro Sector, California. Individual sections will range from approximately 2.4 to 19.3 miles in length. The tactical infrastructure will encroach on multiple privately owned land parcels and public lands managed by the BLM.

This ESP analyzes and documents environmental consequences associated with the Project.

The public may obtain information concerning the status and progress of the Project and the ESP via the project Web site at *www.BorderFencePlanning.com*; by emailing *information@BorderFencePlanning.com*; or by written request to Loren Flossman, Program Manager, SBI Tactical Infrastructure, 1300 Pennsylvania Ave, NW, Washington, DC 20229, Tel: (877) 752-0420, Fax: (703) 752-7754.

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EXECUTIVE SUMMARY

BACKGROUND

On April 1, 2008, the Secretary of the U.S. Department of Homeland Security (DHS), pursuant to his authority under Section 102(c) of Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996, as amended, exercised his authority to waive certain environmental and other laws in order to ensure the expeditious construction of tactical infrastructure along the U.S./Mexico Border. The tactical infrastructure described in this Environmental Stewardship Plan (ESP) is covered by the Secretary's April 1, 2008, waiver (see **Appendix A**). Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the laws that are included in the waiver, the Secretary committed DHS to continue to protect valuable natural and cultural resources. CBP strongly supports the Secretary's commitment to responsible environmental stewardship. To that end, CBP has prepared the following ESP, which analyzes the potential environmental impacts associated with construction of tactical infrastructure in the USBP's El Centro Sector. The ESP also discusses CBP's plans as to how it can mitigate potential environmental impacts. The ESP will guide CBP's efforts going forward.

As it moves forward with the project described in this ESP, U.S. Customs and Border Protection (CBP) will continue to work in a collaborative manner with local government, state and Federal land managers, and the interested public to identify environmentally sensitive resources and develop appropriate best management practices (BMPs) to avoid or minimize adverse impacts resulting from the installation of tactical infrastructure.

Goals and Objectives of the Project

The Project will provide USBP agents with the tools necessary to strengthen their control of the U.S. border between ports of entry (POEs) in the USBP El Centro Sector. The Project will help to deter illegal entries within the USBP El Centro Sector by improving enforcement efficiency, thus preventing terrorists and terrorist weapons, illegal aliens, drugs, and other cross border violators and contraband from entering the United States, while providing a safer work environment for USBP agents. The U.S. Border Patrol (USBP) El Centro Sector has identified six discrete areas along the border that experience high levels of illegal entry. Illegal entry activity typically occurs in areas that are remote and not easily accessed by USBP agents, near POEs where concentrated populations might live on either side of the border, or in locations that have quick access to U.S. transportation routes.

The Project is being carried out pursuant to Section 102 of IIRIRA, 8 U.S.C. § 1103 note. In Section 102(b) of IIRIRA, Congress called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on not less than 700

miles of the southwestern border. This total includes certain priority miles of fencing that are to be completed by December of 2008. Section 102(b) further specifies that these priority miles are to be constructed in areas where it would be practical and effective in deterring smugglers and aliens attempting to gain illegal entry into the United States.

Public Outreach and Coordination

CBP notified relevant Federal, state, and local agencies of the Project and requested input on environmental concerns they might have regarding the Project. CBP has coordinated with the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); State Historic Preservation Office (SHPO); and other Federal, state, and local agencies. A Draft Environmental Assessment (EA) was prepared, copies were mailed to interested parties, it was posted on a public Web site, and a 30-day public review and comment period was announced. A public open house was advertised and held at the Imperial Valley Expo in Imperial, California, on January 9, 2008. The open house was attended by 4 people. Although the Secretary issued the waiver, CBP has continued to work in a collaborative manner with agencies and has considered and incorporated agency and public comments into this ESP. CBP responses to public comments on the Draft EA will also be provided on the *www.BorderFencePlanning.com* Web site

Description of the Project

CBP plans to construct, operate, and maintain approximately 44.6 miles of tactical infrastructure in six discrete sections along the U.S./Mexico international border near Calexico, in the USBP El Centro Sector, Imperial County, California. Three sections will consist of primary pedestrian fence, lighting, access and patrol roads; one section will consist of primary vehicle fence, access and patrol roads; one section will consist of primary pedestrian fence, access and patrol roads; and one section will consist of lighting. The tactical infrastructure will be constructed in areas of the border that are not currently fenced. Locations are based on the USBP El Centro Sector's assessment of local operational requirements where such infrastructure will assist USBP agents in reducing illegal cross-border activities. Congress appropriated funds for this project in CBP's fiscal year (FY) 2007 and 2008 Border Security Fencing, Infrastructure, and Technology Appropriations (Public Law [P.L.] 109-295; P.L. 110-161). Individual sections will range from approximately 2.4 to 19.3 miles in length.

Environmental Impacts, Mitigation, and Best Management Practices

Table ES-1 provides an overview of potential environmental impacts by specific resource areas. **Chapters 2** through **11** of this ESP address these impacts in more detail.

CBP followed specially developed design criteria to reduce adverse environmental impacts and will implement mitigation measures to the extent practicable to further reduce or offset adverse environmental impacts without compromising operational requirements. Design criteria to reduce adverse environmental impacts include selecting a route that will minimize impacts, consulting with Federal and state agencies and other stakeholders to avoid or minimize adverse environmental impacts, and developing appropriate Best Management Practices (BMPs) to protect natural and cultural resources. Potential effects, including physical disturbance and construction of solid barriers on wetlands, riparian areas, streambeds, and floodplains, will be avoided or mitigated whenever possible. BMPs will include implementation of a Construction Mitigation and Restoration (CM&R) Plan, Spill Prevention Control and Countermeasure (SPCC) Plan, Storm Water Pollution Prevention Plan (SWPPP), Environmental Protection Plans (EPPs), Dust Control Plan, Fire Prevention and Suppression Plan, and Unanticipated Discovery Plan.

CBP will enter into a programmatic mitigation agreement with DOI and fund a mitigation pool for adverse impacts that cannot be avoided.

Table ES-1. Summary of Environmental Impacts, Mitigation, and BMPs

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Air Quality	Emissions will result in major short-term adverse impacts.	BMPs to reduce dust and control PM_{10} emissions. Construction equipment will be kept in good operating condition to minimize exhaust Construction speed limits will not exceed 35 miles per hour.
Noise	Noise from construction equipment and increased traffic will result in short-term moderate adverse impacts.	Mufflers and properly working construction equipment will be used to reduce noise. Generators will have baffle boxes, mufflers, or other noise abatement capabilities. Blasting mats will be used to minimize noise and debris.

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Land Use and Visual Resources	Land use changes and incompatibilities will result in long-term minor adverse and beneficial impacts. Visual interruption will result in short- and long-term minor to major adverse impacts.	None required.
Geology and Soils	Grading and contouring will result in short- and long-term minor adverse impacts.	Construction related vehicles will remain on established or existing roads as much as possible and areas with highly erodible soils will be avoided when possible. Gravel or topsoil would be obtained from developed or previously used sources. Where grading is necessary, surface soils will be stockpiled and replaced following construction.
Water Use and Quality		
Hydrology and Groundwater	Grading and contouring will result in short-term minor adverse impacts. Increase in storm water will result in short-term negligible adverse effects on groundwater.	Equipment maintenance, staging, laydown, or fuel dispensing will occur upland to prevent runoff. Project Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented.
Surface Waters and Waters of the United States	Increased impervious surface and runoff potential will result in short-term minor adverse impacts on wetlands. Washes, wetlands, and other waters of the U.S. will be adversely impacted by construction.	Construction activities will stop during heavy rains. All fuels, oils, and solvents will be collected and stored. Stream crossings will not be located at bends to protect channel stability. Equipment maintenance, staging, laydown, or fuel dispensing will occur upland to prevent runoff. SWPPP will be developed and implemented Fence types will allow conveyance of water.

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Floodplains	Construction activities will result in negligible adverse impacts.	Fence maintenance will include removing any accumulated debris on the fence after a rain event to avoid potential future flooding.
Biological Resources		
Vegetation Resources	Disturbance and clearing will result in short- and long-term minor adverse impacts.	Construction equipment will be cleaned to minimize spread of non-native species. Removal of brush in Federally protected areas will be limited to smallest amount possible. Invasive plants that appear on project area will be removed. Fill material, if required, will be weed-free to the maximum extent practicable.
Wildlife and Aquatic Resources	Habitat conversion and fragmentation will result in short- and long-term moderate adverse impacts.	Ground disturbance during migratory bird nesting season will require migratory bird nest survey and possible removal and relocation. To prevent entrapment of wildlife all excavated holes or trenches will either be covered or provided with wildlife escape ramps. All vertical poles and posts that are hollow will be covered to prevent entrapment and discourage roosting. General BMPs will avoid and reduce impacts on wildlife and aquatic resources (see **Appendix E**).

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Threatened and Endangered Species	Loss of potential habitat, fragmentation, and elevated noise will result in short- and long-term minor adverse impacts.	General BMPs, BMPs for peninsular bighorn sheep, and BMPs for peirson's milk-vetch (see **Chapter 7.3.3** and **Appendix E**) and BMPs for Flat Tailed-Horned Lizard (FTHL) (see **Chapter7.3.3**).
Cultural Resources	No impacts will be expected.	None required.
Socioeconomics, Environmental Justice, and Protection of Children	Construction activities, increased employment, and new income will have direct and indirect short-term minor beneficial impacts. Deterrence of cross-border violators will result in direct beneficial effects on safety. No adverse impacts are expected.	None required.
Hazardous Materials and Wastes	Waste generation and use of hazardous materials and wastes will result in short-term negligible adverse impacts will be expected.	All waste materials and other discarded materials will be removed from the project area as quickly as possible. Equipment maintenance, staging, laydown, or fuel dispensing will occur upland to prevent runoff.

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1. GENERAL PROJECT DESCRIPTION

1.1 INTRODUCTION TO THE ENVIRONMENTAL STEWARDSHIP PLAN

On April 1, 2008, the Secretary of the U.S. Department of Homeland Security (DHS), pursuant to his authority under Section 102(c) of Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws in order to ensure the expeditious construction of tactical infrastructure along the U.S./Mexico Border. The tactical infrastructure described in this Environmental Stewardship Plan (ESP) is covered by the Secretary's April 1, 2008, waiver (73 Federal Register [FR] 65, pp. 18293-24, **Appendix A**). Although the Secretary's waiver means that U.S. Customs and Border Protection (CBP) no longer has any specific legal obligations under the laws that are included in the waiver, the Secretary committed DHS to continue to protect valuable natural and cultural resources. CBP strongly supports the Secretary's commitment to responsible environmental stewardship. To that end, CBP has prepared the following ESP, which analyzes the potential environmental impacts associated with construction of tactical infrastructure in the USBP's El Centro Sector. The ESP also discusses CBP's plans as to how it can mitigate potential environmental impacts. The ESP will guide CBP's efforts going forward.

As it moves forward with the project described in this ESP, CBP will continue to work in a collaborative manner with local government, state and Federal land managers, and the interested public to identify environmentally sensitive resources and develop appropriate best management practices (BMPs) to avoid or minimize adverse impacts resulting from the installation of tactical infrastructure.

This ESP is divided in to 13 chapters plus appendices. The first chapter presents a detailed description of the Project. Subsequent chapters present information on the resources present, and evaluate the direct, indirect, and cumulative effects of the Project. The ESP also describes measures CBP has identified—in consultation with Federal, state and local agencies—to avoid, minimize, or mitigate impacts to the environment, whenever possible. The following resource areas are presented in this ESP: air quality; noise; land use and visual resources; geological resources and soils; water use and quality; biological resources (i.e., vegetation, wildlife and aquatic species, special status species); cultural resources; socioeconomics; hazardous materials and wastes. Some environmental resources were not included in this ESP because they were not relevant to the analysis. These potential resource areas include utilities and infrastructure (omitted because the Project will not impact any utilities or similar infrastructure), roadways and traffic (omitted because the Project will not be accessible from public roadways), sustainability (omitted because the Project will use minimal amounts of resources during construction and maintenance), and human health and safety (omitted because construction workers will be subject to

Occupational Safety and Health Administration (OSHA) standards and the Project will not introduce new or unusual safety risks).

Appendix A presents the Secretary's published waiver pursuant to IIRIRA. **Appendix B** provides information on primary pedestrian and vehicle fence designs. **Appendix C** provides air quality emissions calculations. **Appendix D** presents the Biological Survey Report and **Appendix E** presents the Biological Resources Plan.

CBP will follow specially developed design criteria to reduce adverse environmental impacts and will implement mitigation measures to further reduce or offset adverse environmental impacts to the extent possible. Design criteria to reduce adverse environmental impacts include avoiding physical disturbance and construction of solid barriers in wetlands/riparian areas and streambeds. Consultation with Federal and state agencies and other stakeholders will augment efforts to avoid or minimize adverse environmental impacts. And developing appropriate BMPs to protect natural and cultural resources will be utilized to the extent possible. BMPs will include implementation of a Construction Mitigation and Restoration (CM&R) Plan; Spill Prevention Control and Countermeasures (SPCC) Plan; Dust Control Plan; and Unanticipated Discovery Plan for Cultural Resources.

1.2 USBP BACKGROUND

The mission of CBP is to prevent terrorists and terrorist weapons from entering the United States, while also facilitating the flow of legitimate trade and travel. In supporting CBP's mission, USBP is charged with establishing and maintaining effective control of the borders of the United States. USBP's mission strategy consists of five main objectives:

- Establish substantial probability of apprehending terrorists and their weapons as they attempt to enter illegally between the Ports of Entry (POEs)
- Deter illegal entries through improved enforcement
- Detect, apprehend, and deter smugglers of humans, drugs, and other contraband
- Leverage "smart border" technology to multiply the effect of enforcement personnel
- Reduce crime in border communities and consequently improve quality of life and economic vitality of targeted areas.

USBP has nine administrative sectors along the U.S./Mexico international border. Each sector is responsible for implementing an optimal combination of personnel, technology, and infrastructure appropriate to its operational requirements. The USBP El Centro Sector is responsible for Imperial and Riverside counties in

California. The areas affected by the Project include the southernmost portion of Imperial County. Within the USBP El Centro Sector, areas for tactical infrastructure improvements have been identified that will help the Sector gain more effective control of the border and significantly contribute to USBP's priority mission of homeland security.

1.3 GOALS AND OBJECTIVES OF THE PROJECT

The goal of the project is to increase border security within the USBP El Centro Sector with an ultimate objective of reducing illegal cross-border activity. The project further meets the objectives of the Congressional direction in the Fiscal Year (FY) 2007 DHS Appropriations Act (Public Law [P.L.] 109-295), Border Security Fencing, Infrastructure, and Technology appropriation to install fencing, infrastructure, and technology along the border.

The USBP El Centro Sector identified six distinct areas along the border that experience high levels of illegal cross-border activity. This activity occurs in remote areas and in areas that are not easily accessed by USBP agents, near POEs where concentrated populations might live on either side of the border, or in locations that have quick access to U.S. transportation routes.

1.4 DESCRIPTION OF THE PROJECT

CBP plans to construct, operate, and maintain approximately 44.6 miles of tactical infrastructure in six discrete sections along the U.S./Mexico international border near Calexico, in the USBP El Centro Sector, Imperial County, California. Three sections will consist of primary pedestrian fence, lighting, access and patrol roads; one section will consist of primary vehicle fence, access and patrol roads; one section will consist of primary pedestrian fence, access and patrol roads; and one section will consist of lighting. These six sections of tactical infrastructure are designated as Sections B-1, B-2, B-3 (lighting only)[1], B-4, B-5A, and B-5B. **Table 1-1** presents general information for each of the six sections. **Figure 1-1** illustrates the location of the tactical infrastructure within the El Centro Sector.

The tactical infrastructure will be constructed in areas of the border that are not currently fenced. Locations are based on the USBP El Centro Sector's assessment of local operational requirements where such infrastructure will assist USBP agents in reducing illegal cross-border activities. Individual sections will range from approximately 2.4 to 19.3 miles in length.

[1] In January 2004, USBP approved construction of approximately 5 miles of pedestrian fence along the U.S./Mexico international border starting approximately 2 miles west of the Calexico POE. In August 2007, USBP approved the installation of an additional 2.62 miles of pedestrian fence. These 7.62 miles of fence sections are designated as Section B-3 in this ESP.

Table 1-1. Tactical Infrastructure for USBP El Centro Sector

Section Number	Associated USBP Station	General Location	Land Ownership	Type of Tactical Infrastructure	Length of New Fence Section
B-1	El Centro	West of Pinto	Public: Bureau of Land Management (BLM)-managed	Primary vehicle fence, patrol road, access roads	11.3 miles
B-2	El Centro	Monument 224 to West of Calexico	Public: BLM-managed	Primary pedestrian fence, lighting, patrol road, access roads	2.4 miles
B-3	Calexico	West of Calexico	Public: BLM-managed	Lighting (7.4 miles)	N/A
B-4	Calexico	East of Calexico	Public: BLM- and Bureau of Reclamation-managed	Primary pedestrian fence, lighting, patrol road, access roads	8.6 miles
B-5A	Calexico	East of Calexico	Public: BLM- and Bureau of Reclamation-managed	Primary pedestrian fence, lighting, patrol road, access roads	19.3 miles
B-5B	Calexico	East of Calexico to Monument 210	Public: BLM-managed	Primary pedestrian fence, patrol road, access roads	3.0 miles
				Total	**44.6 miles**

Notes:
Lighting will be spaced approximately 50 yards apart.
NA = Not Applicable

Design criteria that have been established based on USBP operational needs require that, at a minimum, any primary pedestrian fencing must meet the following requirements:

- Built 15 to 18 feet high and extend below ground
- Capable of withstanding a crash of a 10,000-pound (gross weight) vehicle traveling at 40 miles per hour

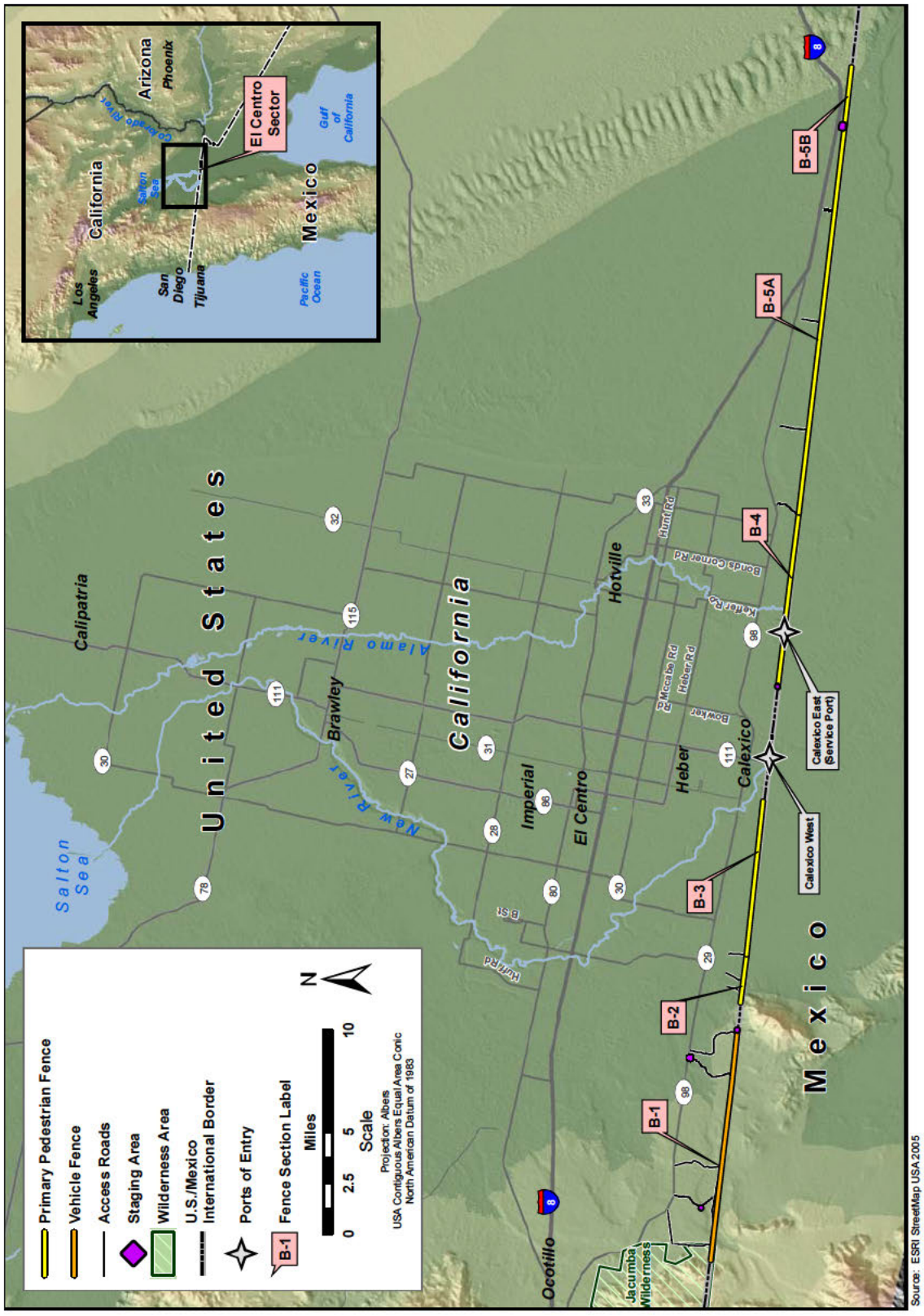

Figure 1-1. Locations of Tactical Infrastructure

- Capable of withstanding vandalism, cutting, or various types of penetration
- Semi-transparent, as dictated by operational need
- Designed to survive extreme climate changes
- Designed to reduce or minimize impacts on small animal movements
- Engineered not to impede the natural flow of surface water
- Aesthetically pleasing to the extent possible.

In addition, the United States Section, International Boundary and Water Commission (USIBWC) has design criteria for tactical infrastructure to avoid adverse impact on floodplains, levees, and flood control operations (IBWC 2007). Fence in Section B5-B has been designed for dune conditions. Examples of primary pedestrian and vehicle fence are included in **Appendix B.**

The tactical infrastructure will be installed approximately 3 feet north of the U.S./Mexico international border within the Roosevelt Reservation.[2] The tactical infrastructure will be constructed around International Boundary and Water Commission (IBWC) monuments and locked gates will be installed at each monument to allow for access to the monuments. The tactical infrastructure will impact an approximate 60-foot-wide corridor along each fence section. **Figure 1-2** shows a schematic of the typical temporary and permanent impact area for tactical infrastructure. This corridor will include fences, patrol roads, and lighting; and construction staging areas. In some locations such as near the Calexico East POE, construction will include removal of spoils and berm material to provide a clear line of site between the patrol road and the fence. Access roads will be a maximum of 30 feet wide (total disturbance). Vegetation will be cleared and grading and placement of aggregate will occur where needed. The area that will be permanently impacted by construction of tactical infrastructure along all six sections will total approximately 324 acres. Impacts on jurisdictional waters of the United States, including wetlands, will be mitigated.

Construction, operation, and maintenance of tactical infrastructure will increase border security in the USBP El Centro Sector and may result in a change to illegal cross-border traffic patterns.

[2] In 1907, President Roosevelt reserved from entry and set apart as a public reservation all public lands within 60 feet of the international boundary between the United States and Mexico within the State of California and the Territories of Arizona and New Mexico. Known as the "Roosevelt Reservation," this land withdrawal was found "necessary for the public welfare ... as a protection against the smuggling of goods." The proclamation excepted from the reservation all lands, which, as of its date, were (1) embraced in any legal entry; (2) covered by any lawful filing, selection, or rights of way duly recorded in the proper U.S. Land Office; (3) validly settled pursuant to law; or (4) within any withdrawal or reservation for any use or purpose inconsistent with its purposes (CRS 2006).

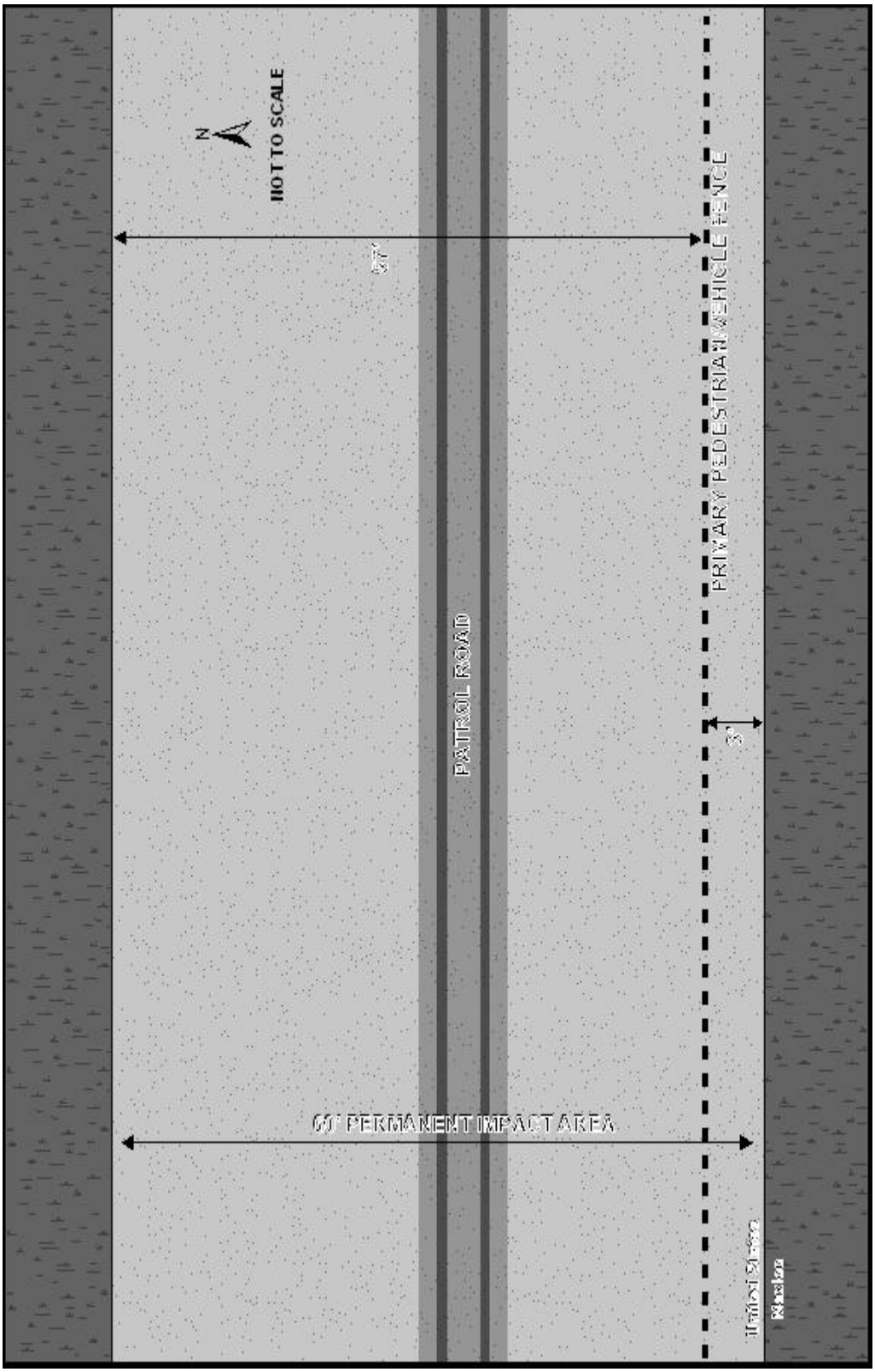

Figure 1-2. Schematic of Project Impact Areas

However, changes to illegal cross-border traffic patterns result from a myriad of factors in addition to USBP operations and therefore are considered unpredictable and beyond the scope of this ESP.

Wherever possible, existing roads and previously disturbed areas will be used for construction access and staging areas. Any necessary aggregate or fill material will be clean material obtained by construction contractors from commercially available sources that will not pose an adverse impact on biological or cultural resources.

Fence maintenance will either be performed by USBP El Centro Sector personnel or contracted personnel. The fences will be made from non-reflective steel. No painting will be required. Fence maintenance will include removing any accumulated debris on the fence after a rain event to avoid potential future flooding. Sand that builds up against the fence and brush will also be removed as needed. Brush removal could include mowing, removal of small trees and application of herbicide if needed. During normal patrols, Sector personnel will observe the condition of the fence. Any destruction or breaches of the fence will be repaired, as needed.

Construction of other tactical infrastructure might be required in the future as mission and operational requirements are continually reassessed. To the extent that other current and future actions are known, they are discussed in **Chapter 11**, Related Projects and Potential Effects.

1.5 PUBLIC OUTREACH AND COORDINATION

CBP notified relevant Federal, state, and local agencies of the Project and requested input on potential environmental concerns such parties might have regarding the Project. CBP has coordinated with the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); State Historic Preservation Office (SHPO); and other Federal, state, and local agencies.

Along some of the fence sections the tactical infrastructure will follow rights-of-way (ROWs) administered, maintained, or used by the USIBWC. The IBWC is an international body composed of a U.S. Section and a Mexican Section, each headed by an Engineer-Commissioner appointed by its respective president. Each Section is administered independently of the other. The USIBWC is a Federal government agency headquartered in El Paso, Texas, and operates under the foreign policy guidance of the Department of State (IBWC 2007). The USIBWC will provide access and ROWs to construct tactical infrastructure within the El Centro Sector. The USIBWC will also ensure that design and placement of the tactical infrastructure does not impact flood control process and does not violate treaty obligations between the United States and Mexico.

A Draft Environmental Assessment (EA) was prepared, copies were mailed to interested parties, it was posted on a public Web site, and a 30-day public review and comment period was announced. A public open house was advertised and held at the Imperial Valley Expo in Imperial, California, on January 9, 2008. The open house was attended by 4 people. Although the Secretary issued the waiver, CBP has continued to work in a collaborative manner with agencies and has considered and incorporated agency and public comments into this ESP. CBP responses to public comments on the Draft EA will also be provided on the *www.BorderFencePlanning.com* Web site.

1.6 BMPS AND MITIGATION PLAN

CBP applied various design criteria to reduce adverse environmental impacts associated with the Project, including selecting a route that will avoid or minimize effects on environmental and cultural resources. Nonetheless, CBP has determined that construction, operation, and maintenance of tactical infrastructure in USBP El Centro Sector will result in adverse environmental impacts. These impacts will be most adverse during construction. Mitigation resources that are available during implementation of the Project include:

- BMPs will be used to avoid, minimize, or mitigate impacts on biological resources.
- CBP will implement a CM&R Plan; SPCC Plan; Blasting Specifications, Dust Control Plan; Fire Prevention and Suppression Plan; and Unanticipated Discovery Plan for Cultural Resources to protect natural and cultural resources and residential areas during construction and operation of the Project.
- CBP will consult with the USFWS, the California Department of Fish and Game (CDFG), California SHPO, Native American tribes, and others to identify appropriate mitigation measures.
- An environmental inspection and Mitigation and Monitoring Plan will be prepared to ensure compliance by contractors with all mitigation measures.

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2. AIR QUALITY

2.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Clean Air Act (CAA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CAA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for air quality.

The air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these "criteria pollutants" in ambient air are expressed in units of parts per million (ppm), micrograms per cubic meter ($\mu g/m^3$), or milligrams per cubic meter (mg/m^3).

While issuance of the waiver eliminated the requirement for CBP to comply with the CAA, the applicable thresholds and standards have been used to evaluate the potential impacts on air quality. The CAA directed USEPA to develop National Ambient Air Quality Standards (NAAQS) for pollutants that have been determined to affect human health and the environment. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [PM_{10}] and particulates equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS are ambient air quality standards to protect the public health; secondary NAAQS specify levels of air quality to protect the public welfare such as effects on vegetation, crops, wildlife, economic values, and visibility.

States designate any area that does not meet the national primary or secondary ambient air quality standard for a criteria pollutant as a nonattainment area. For O_3, each designated nonattainment area is classified as marginal, moderate, serious, severe, or extreme, based on ambient O_3 concentrations. The Cal/EPA, California Air Resources Board (CARB) has delegated responsibility for implementation of the Federal CAA and California CAA to local air pollution control agencies.

The State of California adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants. The California standards are more stringent than the Federal primary standards. **Table 2-1** presents the primary and secondary USEPA NAAQS and SAAQS.

Table 2-1. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard	
		Concentration	Primary	Secondary
O_3	1 Hours [c]	0.09 ppm (180 µg/m^3)	----	Same as Primary Standard
	8 Hours [b]	0.070 ppm (137 µg/m^3)	0.08 ppm (157 µg/m^3)	
PM_{10}	24 Hours [a]	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean [d]	20 µg/m^3	----	
$PM_{2.5}$	24 Hours [f]	No separate State Standard	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean [e]	12 µg/m^3	15 µg/m^3	
CO	8 Hours [a]	9.0 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)	None
	1 Hour [a]	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
NO_2	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 Hour	0.18 ppm (338 µg/m^3)	----	
SO_2	Annual Arithmetic Mean	----	0.030 ppm (80 µg/m^3)	----
	24 Hours [a]	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	----
	3 Hours [a]	----	----	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	----	
Pb	30 Day Average	1.5 µg/m^3	----	----
	Calendar Year	----	1.5 µg/m^3	Same as Primary Standard
Visibility Reducing Particles	8 Hours	Extinction coefficient of 0.23 per kilometer visibility of 10 miles or more due to particles when relative humidity is less than 70 percent	No Federal Standards	
Sulfates	24 Hours	25 µg/m^3	No Federal Standards	

Pollutant	Averaging Time	California Standard	National Standard	
		Concentration	Primary	Secondary
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	No Federal Standards	
Vinyl Chloride	24 Hours	0.01 ppm (26 µg/m^3)	No Federal Standards	

Sources: USEPA 2006a and CARB 2007a

Notes: Parenthetical values are approximate equivalent concentrations.

[a] Not to be exceeded more than once per year.

[b] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[c] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1. (b) As of June 15, 2005, USEPA revoked the 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.

[d] To attain this standard, the expected annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.

[e] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2\,5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[f] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3.

These programs are detailed in State Implementation Plans (SIPs), which are required to be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA. USEPA has delegated the authority for ensuring compliance with the NAAQS to the CARB.

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. All areas within each AQCR are Therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now attainment, and unclassified means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment.

Many chemical compounds found in the Earth’s atmosphere act as “greenhouse gases.” These gases allow sunlight to enter the atmosphere freely. When sunlight strikes the Earth’s surface, some of it is reflected back towards space as infrared radiation (heat). Greenhouse gases absorb this infrared radiation and

trap the heat in the atmosphere. Over time, the trapped heat results in the phenomenon of global warming.

In April 2007, the U.S. Supreme Court declared that carbon dioxide (CO_2) and other greenhouse gases are air pollutants under the CAA. The Court declared that the USEPA has the authority to regulate emissions from new cars and trucks under the CAA.

Many gases exhibit these "greenhouse" properties. The sources of the majority of greenhouse gases come mostly from natural sources but are also contributed to by human activity.

2.2 AFFECTED ENVIRONMENT

The Project is within Imperial County, California, within the Southeast Desert Air Quality Control Region (SDAQCR). The SDAQCR is composed of Imperial County, and portions of Kern, Los Angeles, Riverside, and San Bernardino counties, California. Imperial County is within a Federal marginal and state moderate nonattainment area for 8-hour O_3, Federal serious and state nonattainment area for PM_{10}, and is in attainment/unclassified for all other criteria pollutants. Although O_3 is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "O_3 precursors." These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_2.

The Project is within the Imperial County Air Pollution Control District (ICAPCD). The ICAPCD has established air pollution control regulations in California Code of Regulations (CCR) Titles 13 and 17. The ICAPCD has also promulgated rules regulating the emissions of toxic substances which are defined as those chemicals listed in California Health and Safety Code, Division 26 Air Resources, Part 2 State Air Resources Board, Chapter 3.5 Toxic Air Contaminants plus any other air pollutant that is considered a health hazard, as defined by the Occupational Safety and Health Administration (OSHA).

2.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

The Federal *de minimis* threshold emissions rates were established by USEPA in the General Conformity Rule to focus analysis requirements on those Federal actions with the potential to substantially affect air quality. **Table 2-2** presents these thresholds, by regulated pollutant. These *de minimis* thresholds are similar, in most cases, to the definitions for major stationary sources of criteria

and precursors to criteria pollutants under the CAA's New Source Review Program (CAA Title I). As shown in **Table 2-2**, *de minimis* thresholds vary depending on the severity of the nonattainment area classification.

Table 2-2. Conformity *de minimis* Emissions Thresholds

Pollutant	Status	Classification	*de minimis* Limit (tpy)
O_3 (measured as NO_x or VOCs)	Nonattainment	Extreme Severe Serious Moderate/marginal (inside ozone transport region) All others	10 25 50 50 (VOCs)/100 (NO_x) 100
	Maintenance	Inside ozone transport region Outside ozone transport region	50 (VOCs)/100 (NO_x) 100
CO	Nonattainment/ maintenance	All	100
PM_{10}	Nonattainment/ maintenance	Serious Moderate Not Applicable	70 100 100
$PM_{2.5}$ (measured directly, as SO_2, or as NO_x)	Nonattainment/ maintenance	All	100
SO_2	Nonattainment/ maintenance	All	100
NO_x	Nonattainment/ maintenance	All	100

Source: 40 Code of Federal Regulations (CFR) 93.153

Imperial County is within a Federal marginal and state moderate nonattainment area for 8-hour O_3 and a Federal serious and state nonattainment area for PM_{10}, and is in attainment/unclassified for all other criteria pollutants. Regulated pollutant emissions from the Project will not contribute to or affect local or regional attainment status with the NAAQS.

Construction Projects. The Project will generate air pollutant emissions from the construction projects and the operation of generators to supply power to construction equipment. Minor, short-term adverse effects will be expected with implementation of dust control measures.

The construction projects will generate total suspended particulate and PM_{10} emissions as fugitive dust from ground-disturbing activities (e.g., minor grading

and trenching, removal of spoils and berm) and from combustion of fuels in construction equipment. Fugitive dust emissions will be greatest during the initial site-preparation activities and will vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Estimated ground disturbance associated with the Project will total approximately 324 acres and will occur in stages as sections are constructed. CBP will develop a Dust Control Plan and implement best available control measures for PM_{10} during construction and earthmoving activities.

Construction operations will also result in emissions of criteria pollutants as combustion products from construction equipment. These emissions will be of a temporary nature. For purposes of this analysis, the project duration and affected project site area that will be disturbed was used to estimate fugitive dust and all other criteria pollutant emissions. The construction emissions presented in **Table 2-3** include the estimated annual construction PM_{10} emissions associated with the Project.

Table 2-3. Total Construction Emissions Estimates

Description	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Construction Emissions	4.0	0.2	1.5	0.01	67.1	10.0
Generator Emissions	19.1	1.6	4.1	1.3	1.3	1.3
Total Project Emissions	**23.1**	**1.8**	**5.6**	**1.3**	**68.5**	**11.3**
Federal *de minimis* Threshold	100	100	NA	NA	70	NA
SDAQCR Regional Emissions	69,491	57,494	398,793	937	59,518	21,073
Percent of SDAQCR Regional Emissions	**0.026%**	**0.003%**	**0.002%**	**0.023%**	**0.115%**	**0.054%**

Source: USEPA 2007b

Appendix C contains the detailed spreadsheets for calculation of air emissions. These emissions will produce elevated short-term PM_{10} ambient air concentrations. However, the effects will be temporary, and will fall off rapidly with distance from the construction sites. Construction emissions resulting from the Project will not exceed the *de minimis* threshold limits and will not exceed 10 percent of the regional air emissions values. Specific information describing the types of construction equipment required for a specific task, the hours the equipment is operated, and the operating conditions vary widely from project to

project. For purposes of analysis, these parameters were estimated using established methodologies for construction and experience with similar types of construction projects. Combustion by-product emissions from construction equipment exhausts were estimated using USEPA's NONROAD Model emissions factors for construction equipment. As with fugitive dust emissions, combustion emissions will produce slightly elevated air pollutant concentrations. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher NO_x and PM_{10} emissions. Later phases of construction projects involve more light gasoline equipment and surface coating, resulting in more CO and VOC emissions. However, the effects will be temporary, fall off rapidly with distance from the construction site, and will not result in any long-term effects.

The Project is projected to require six diesel-powered generators to power construction equipment. These generators are estimated to be approximately 75 horsepower each and operated approximately 8 hours per day for 190 working days. Operational emissions associated with the Project are shown in **Table 2-2**. The emissions factors and estimates were generated based on guidance provided in USEPA AP-42, Volume I, *Stationary Internal Combustion Sources*.

Operations and Maintenance Activities. The Project will generate air pollutant emissions from the continuation of operations and increased maintenance activities along the Project corridor. Minor, long-term adverse effects will be expected from increased maintenance. The estimated air emissions from long-term vehicle operations and maintenance activities are shown in **Table 2-4**.

Table 2-4. Total Operations and Maintenance Vehicle Emissions Estimates from the Project

NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2.2	0.3	2.0	0.002	0.08	0.07

Current USBP El Centro Sector operations include using techniques, such as sign cutting (i.e., searching for signs of disturbances in natural conditions) and tire dragging (i.e., dragging a tire behind a vehicle to make the ground smooth), which involve driving vehicles on unpaved roads or routes. The USBP El Centro Sector has an ICAPCD-approved Fugitive Dust Control Plan. For the most part, operations will be essentially the same under the Project. However, after construction is completed, USBP El Centro Sector will begin on-road patrols along Sections B-1, B-2, B-4, B-5A, and B-5B. The Project could result in an overall decrease in ground disturbance because border patrol agents will patrol more frequently along the new stabilized roads. The vehicles used for surveillance of the existing border area, such as Section B-3, are currently generating criteria pollutants and will not introduce new pollutant sources. The

Project is not expected to increase off-road border patrol operations or increase fugitive dust emissions; therefore, operations are expected to have a negligible contribution to criteria pollutant emissions.

The construction of new tactical infrastructure will increase infrastructure maintenance activities within the USBP El Centro Sector. It is anticipated that future maintenance will primarily consist of welding and fence section replacements, as needed. In addition some maintenance activities will require the use of a fork lift to clear sand as needed from fencing. Maintenance activities will result in criteria pollutant air emissions well below the *de minimis* thresholds and will have a negligible contribution to the overall air quality in the SDAQCR, as shown in **Table 2-3** (USEPA 2007b). Minor long-term adverse impacts on air quality will be expected.

Greenhouse Gases. The Project will result in short-term CO_2 emissions from the operation of construction vehicles and generators. Operation of construction vehicles will result in an estimated 474 tons of CO_2, and operation of generators will result in an estimated 710 tons of CO_2. Therefore, short-term greenhouse gas emissions associated with construction activities will total approximately 1,184 tons of CO_2.

The USBP El Centro Sector currently patrols along Sections B-1, B-2, B-4, B-5A, and B-5B. The vehicles used for surveillance and patrol of the existing border areas, such as at Section B-3, are currently generating CO_2; therefore, no net increase of CO_2 emissions will be expected. Maintenance of tactical infrastructure will increase under the Project, which could result in CO_2 emissions of approximately 248 tpy.

The USEPA has estimated that the total greenhouse emissions for California were 427 million metric tons of CO_2 equivalent (MMTCE) in 1990 (CARB 2007b). Of this, an estimated 3.3 MMTCE are associated with the SDAQCR region. The short-term CO_2 emissions associated with construction (1,184 tons) represent less than 0.0003 percent of the estimated California CO_2 inventory and 0.03 percent of the estimated SDAQCR CO_2 inventory. Long-term increases in CO_2 emissions will result from maintenance activities (248 tpy) representing negligible fractions of the estimated California and SDAQCR CO_2 inventories. The Project will be expected to have a negligible contribution to CO_2 and greenhouse gases.

Summary. As shown in **Tables 2-3** and **2-4**, emissions from the Project will not exceed the *de minimis* thresholds for the SDAQCR and will also be less than 10 percent of the emissions inventory for SDAQCR (USEPA 2007b). Minor adverse impacts on local air quality will be anticipated from implementation of the Project.

3. NOISE

3.1 DEFINITION OF THE RESOURCE

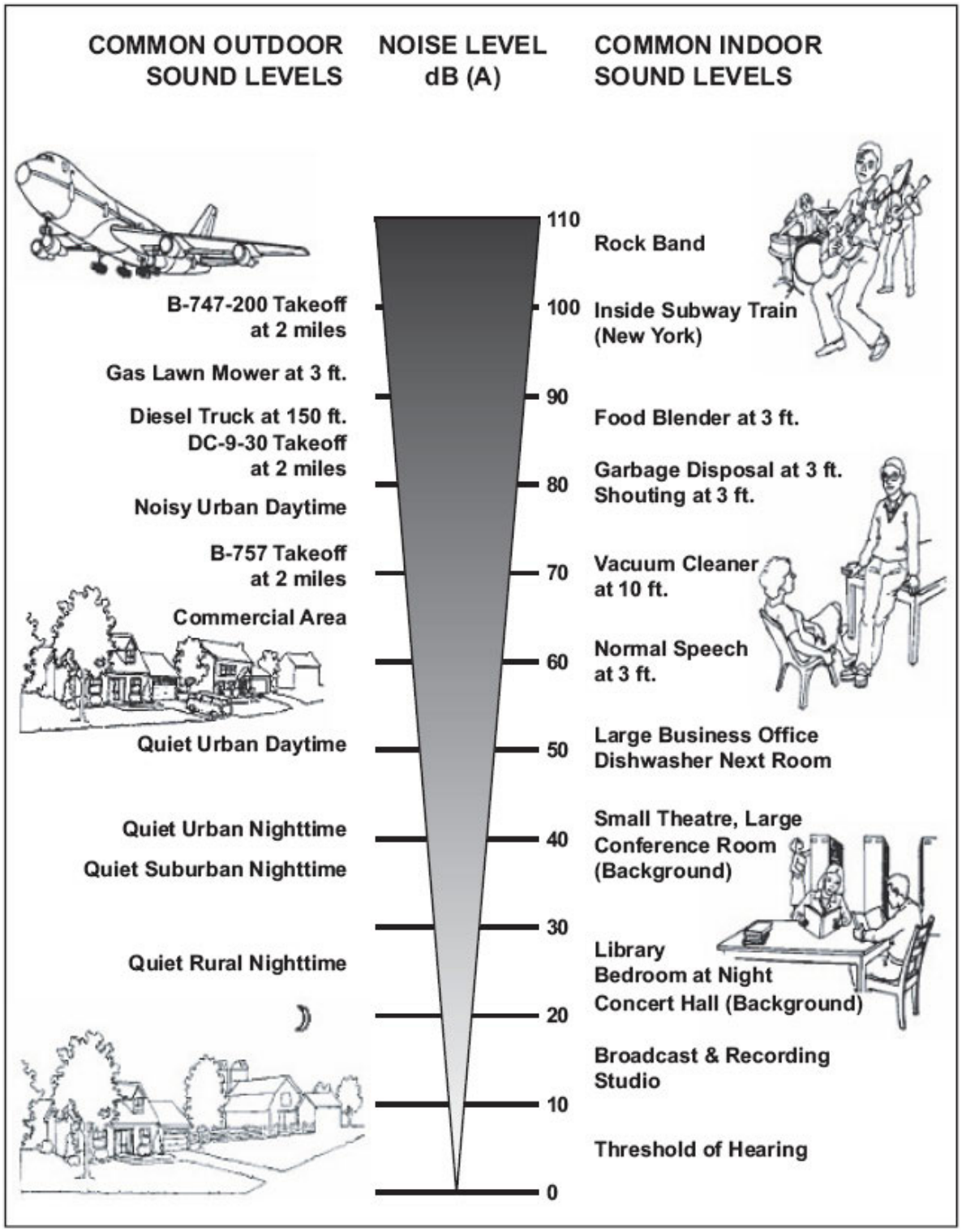
Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations on noise resources.

Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Sound is defined as a particular auditory effect produced by a given source, for example the sound resulting from rain hitting a metal roof. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Sound or noise (depending on one's perception) can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or an annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) in which occasional or persistent sensitivity to noise above ambient levels exists.

Sound is measured with instruments that record instantaneous sound levels in decibels. A-weighted decibels (dBA) are sound level measurements used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency content of a sound-producing event to represent the way in which the average human ear responds to the audible event. Construction-, vehicle-, and aircraft-related noise levels are analyzed using dBA.

Noise levels in residential areas vary depending on the housing density, location, and surrounding use. As shown in **Figure 3-1**, a quiet urban area in the daytime is about 50 dBA, which increases to 65 dBA for a commercial area, and 80 dBA for a noisy urban daytime area.

Construction Sound Levels. Building construction, modification, and demolition work can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. **Table 3-1** lists noise levels associated with common types of construction equipment that are likely to be used under the Project. Additionally,



Source: Landrum & Brown 2002

Figure 3-1. Common Sound Levels

Table 3-1. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Clearing and Grading	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
Excavation	
Backhoe	72–93
Jackhammer	81–98
Building Construction	
Concrete mixer	74–88
Welding generator	71–82
Pile driver	91–105
Crane	75–87
Paver	86–88

Source: USEPA 1971

the fence will be constructed using pile driving. Noise levels from pile-driving equipment have been measured at range of 91 dBA to 101 dBA (USEPA 1971). In general, construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area. Pile driving will exceed ambient sound levels by approximately 25 to 35 dBA in an urban environment and 35 to 45 dBA in a quiet suburban area.

3.2 AFFECTED ENVIRONMENT

The Project construction corridor is adjacent to both urban/mixed use areas and rural/undeveloped areas. The areas north of the U.S./Mexico international border are largely rural/undeveloped areas. The most prominent sources of noise in these areas will be from vehicle traffic and agricultural equipment. Expected daytime noise levels in these areas will be approximately 50 dBA or less. The closest populations on the U.S. side of the construction corridor are several unidentified buildings approximately 400 feet north of the construction corridor. The areas south of the western end of the construction corridor, in Mexicali, Mexico, are urban/mixed use areas. The city of Mexicali, Mexico, has a population of approximately 1 million. The most prominent sources of noise in this area will be from vehicle traffic and local industry. Expected daytime noise levels in these areas could range from 60 dBA to 80 dBA. The closest populations in Mexicali, Mexico, are approximately 50 feet from the construction

corridor. Moving east along the construction corridor, once outside of the city of Mexicali, Mexico, the areas are largely rural/undeveloped. The most prominent sources of noise in these areas will be from vehicle traffic and agricultural equipment. Expected daytime noise levels in these areas will be approximately 50 dBA or less.

3.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Short-term, moderate, adverse effects on local populations in Mexicali, Mexico, and short-term, minor adverse effects on local U.S. populations will result from noise associated with construction activities. The effect on local populations in Mexicali, Mexico, will be greater than populations in the United States because of the size of the population and its proximity to the construction corridor.

Noise from construction activities varies depending on the type of construction being done, the area that the project will occur in, and the distance from the source. To predict how construction activities will impact adjacent populations, the cumulative noise for several pieces of equipment (generator set, industrial saw, and welder) (see **Table 3-1**) and pile driving was estimated. Pile driving will be the dominant source of noise associated with the Project. To estimate the worst-case scenario, the higher noise level for pile driving was used (101 dBA). Under the Project, the cumulative noise from all construction equipment and pile driving was estimated to be 101 dBA at 50 feet from construction activities.

The residents closest to the construction in Mexicali, Mexico, will be approximately 50 feet south of the construction corridor. The residents closest in the United States will be approximately 400 feet north of the construction corridor. Populations in Mexico will experience noise levels of approximately 101 dBA from construction, including pile driving. Populations in the United States will experience noise levels of approximately 83 dBA. Implementation of the Project will have localized, short-term, minor and moderate, adverse effects on the acoustical environment from the use of heavy equipment and pile driving during construction activities. Pile driving, which will be the dominant source of noise, will be an intermittent noise during construction. Noise impacts from increased traffic due to construction vehicles will also be temporary in nature.

Long-term, negligible, adverse effects on the acoustical environment will continue as a result of existing patrols. Patrols consist of a single vehicle driving along the border on the U.S. side.

4. LAND USE AND VISUAL RESOURCES

4.1 LAND USE

4.1.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts on land use.

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. There is, however, no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and definitions vary among jurisdictions.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Tools supporting land use planning include master plans/management plans and zoning regulations. Land use constraints due to sound are described in **Chapter 3.**

4.1.2 Affected Environment

Land uses in and adjacent to the construction corridor, as categorized by Imperial County, include General Agriculture, Heavy Agriculture, Government Special Use, and BLM Land. General Agriculture Zones are areas that are suitable and intended primarily for agricultural-related compatible uses. Heavy Agricultural Zones are areas suitable for agriculture that prevent the encroachment of incompatible uses onto and within agricultural lands and prohibit the premature conversion of such lands to nonagricultural uses. This land use category is intended to promote the heaviest of agricultural uses in the most suitable land areas of Imperial County. Facilities which are necessary or advantageous to the general welfare of the community are permitted in both the General Agriculture and Heavy Agriculture Zones.

Government Special Public Use Zones are areas for the construction, development, and operation of governmental facilities and special public facilities, such as security facilities, jails, solid and hazardous wastes facilities, and other similar special public benefit uses (IDCP 1998).

The remainder of the land is managed by the BLM El Centro Field Office under the California Desert Conservation Act (BLM undated). The eastern end of the

construction corridor ends at the Imperial Sand Dunes Recreation Area, which is also managed by the BLM.

4.1.3 Direct and Indirect Effects of the Project

Long-term, minor, adverse and beneficial direct and indirect effects on land use will occur as a result of the Project. Direct effects will occur in areas characterized as General Agriculture and Heavy Agriculture Zones because small areas will be permanently converted to Government Special Use Zones. These areas are currently near the U.S./Mexico international border and it is likely that the land use change will not result in the loss of agricultural lands. The Project will have no direct effect on the Government Special Use land use category.

Long-term, minor, adverse direct effects on land use will occur on BLM-managed lands in the area of the Project. It is the mission of the BLM to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. The Project will occur in a rural area that is managed by BLM, including an area near the Imperial Sand Dunes Recreation Area at the eastern end of the construction corridor. However, these areas are remote areas along the U.S./Mexico international border. The Project will not result in a loss of BLM-managed lands. Therefore, the effects will be minor.

Indirect beneficial effects could occur as a result of decreased illegal cross-border activities within the areas adjacent to the Project.

4.2 VISUAL RESOURCES

4.2.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts on visual resources.

Visual resources include both natural and man-made features that influence the visual appeal of an area for residents and visitors. Visual resources can be defined as the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

In order to meet its responsibility to maintain the scenic values of public lands, BLM has developed a Visual Resource Management (VRM) system based on human perceptions and expectations in the context of the existing landscape. Different levels of scenic values require different levels of management. Determining how an area should be managed first requires an assessment of the

area's scenic values. For management purposes, BLM has developed Visual Resource Classes.

Class I Objective. The objective of these classes is to preserve the existing character of the landscape. This class provides for natural ecological changes but also allows very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective. The objective of these classes is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities are allowed, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. New projects can be approved if they blend in with the existing surroundings and don't attract attention.

Class III Objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities might attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. New projects can be approved that are not large scale, dominating features.

Class IV Objective. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities can dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of predominant natural features (BLM 1986a).

4.2.2 Affected Environment

As listed in **Table 1-1**, the majority of the Project will be on Federal lands managed by BLM. Currently, the BLM El Centro Field Office does not have specific Visual Resource Classes for the project corridor. VRM classifications are developed in BLM resource management plans and the existing plans do not include the applicable classifications for the project corridor. BLM lands in the project corridor are managed according the California Desert Conservation Area as Multiple-Use Class L and Class I which are generally consistent with VRM Classes II and IV respectively. Section B-1 and BLM lands along Sections B-2 and B-4 fall into Multiple-Use Class L, which according to VRM Class II, can be seen, but should not attract attention of the casual observer. The level of change to the landscape should be low and changes should repeat the basic elements found in the natural features of the landscape in form, line, color and texture. Section B-5B falls into the Class I or "Intensive Use" meaning its purpose is to

provide for concentrated use of lands and resources to meet human needs. Reasonable protection will be provided for sensitive natural and cultural values (BLM 2007a).

4.2.3 Direct and Indirect Effects of the Project

Degree of Contrast Criteria. To properly assess the contrasts between the existing conditions and the Project, it is necessary to break each down into the basic features (i.e., landform/water, vegetation, and structures) and basic elements (i.e., form, line, color, and texture) so that the specific features and elements that cause contrast can be accurately identified.

General criteria and factors used when rating the degree of contrast are as follows:

- *None:* The element contrast is not visible or perceived.
- *Weak:* The element contrast can be seen but does not attract attention.
- *Moderate:* The element contrast begins to attract attention and dominate the characteristic landscape.
- *Strong:* The element contrast demands attention, cannot be overlooked, and is dominant in the landscape.

When applying the contrast criteria, the following factors are considered:

1. *Distance*. The contrast created by a Project usually is less as viewing distance increases.
2. *Angle of Observation*. The apparent size of a Project is directly related to the angle between the viewer's line-of-sight and the slope upon which the Project is to take place. As this angle nears 90 degrees (vertical and horizontal), the maximum area is viewable.
3. *Length of Time the Project Is In View*. If the viewer can only view the Project for a short period of time, the contrast might not be of great concern. If the Project can be viewed for a long period of time, the contrast could be very high.
4. *Relative Size or Scale*. The contrast created by the Project is directly related to its size and scale as compared to the immediate surroundings.
5. *Season of Use.* Contrast ratings should consider the physical conditions that exist during the heaviest or most critical visitor-use season, such as snow cover and tree defoliation during the winter, leaf color in the fall, and lush vegetation and flowering in the spring.
6. *Light Conditions*. The amount of contrast could be substantially affected by the light conditions. The direction and angle of light can affect color intensity, reflection, shadow, form, texture, and many other visual aspects

of the landscape. Light conditions during heavy periods must be a consideration in contrast ratings.

7. *Recovery Time*. The amount of time required for successful revegetation should be considered. Few projects meet the VRM objectives during construction activities. Recovery usually takes several years and goes through several phrases (e.g., bare ground to grasses, to shrubs, to trees).
8. *Spatial Relationships*. The spatial relationship within a landscape is a major factor in determining the degree of contrast.
9. *Atmospheric Conditions*. The visibility of a Project due to atmospheric conditions such as air pollution or natural haze should be considered.
10. *Motion*. Movements such as waterfalls, vehicles, or plumes draw attention to a Project (BLM 1986b).

The construction activity associated with the Project will result in both temporary and permanent moderate contrasts to Visual Resources. BLM lands along Sections B-1, B-2, and B-4 fall into Multiple-Use Class L, which according to VRM Class II, may be seen, but should not attract attention of the casual observer. The level of change to the landscape should be low and changes should repeat the basic elements found in the natural features of the landscape in form, line, color and texture. Primary pedestrian fence along Sections B-2 and B-4 will be a moderate to strong contrast for viewers near the fence. However, public viewing is limited in this area because of low visitation frequency and limited line of sight from other locations. Primary pedestrian fence in Section B–5B will be consistent with intensive use associated with VRM Class I. Primary vehicle fence along Sections B-1 will be a weak contrast for viewers near the fence.

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5. GEOLOGY AND SOILS

5.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations on geological and soils resources.

Geology and soils resources include the surface and subsurface materials of the earth. Within a given physiographic province, these resources typically are described in terms of topography, soils, geology, minerals, and paleontology, where applicable.

Topography is defined as the relative positions and elevations of the natural or human-made features of an area that describe the configuration of its surface. Regional topography is influenced by many factors, including human activity, seismic activity of the underlying geologic material, climatic conditions, and erosion. Information describing topography typically encompasses surface elevations, slope, and physiographic features (i.e., mountains, ravines, hills, plains, deltas, or depressions).

Site-specific geological resources typically consist of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geologic resources to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), topography, and soil stability.

Soils are the unconsolidated materials overlying bedrock or other parent material. They develop from the weathering processes of mineral and organic materials and are typically described in terms of landscape position, slope, and physical and chemical characteristics. Soil types differ in structure, elasticity, strength, shrink-swell potential, drainage characteristics, and erosion potential, which can affect their ability to support certain applications or uses. In appropriate cases, soil properties must be examined for compatibility with particular construction activities or types of land use.

Prime and unique farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically

produce sustained high quality or high yields of a specific crop when treated and managed according to acceptable farming methods. Soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The FPPA and Natural Resources Conservation Service (NRCS) pertain to activities on prime and unique farmland, as well as farmland of statewide and local importance (see 7 CFR Part 658, 5 July 1984). Determination of whether an area is considered prime or unique farmland and potential impacts associated with a project is based on preparation of the Farmland Conversion Impact Rating Form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR 658).

5.2 AFFECTED ENVIRONMENT

Physiography and Topography. The USBP El Centro Sector is in the southwestern corner of the Basin and Range physiographic province which is characterized by linear north and south trending valleys and normal fault-block mountain ranges resulting from extension of the Earth's crust. The topographic profile of the USBP El Centro Sector is characterized by gently rolling lands with a few steep slopes. Elevations in the USBP El Centro Sector range from about 15 to 65 feet above mean sea level (MSL) along the western section of the fence and about 145 to 200 feet above MSL along the eastern section of the fence (TopoZone.com 2007).

Geology. The USBP El Centro Sector is within the Salton Trough, a structural and topographic depression that lies within the Basin and Range physiographic province. The Salton Trough which is an extension of the East Pacific Rise, emerges from a 1,000-mile-long trough occupied by the Gulf of California and continues northward to Palm Springs. Underlying the Salton Trough are thousands of feet of marine and nonmarine sediments (Morton 1977, Hunt 1974). The depth to basement rock ranges from 11,000 to 15,400 feet, though metamorphism of sedimentary deposits is known to occur at depths as shallow as 4,000 feet as a result of high heat flows associated with crustal spreading. High heat flows also give rise to geothermal steam; several "known geothermal resources areas" have been delineated by the U.S. Geological Survey (USGS) in the Imperial Valley (Morton 1977).

Soils. The soils of the USBP El Centro Sector are all well-drained to some extent, have varying permeability, and occur on 0–2 percent slopes with the exception of the Badland soil map unit (30–75 percent slopes). Twelve soil map

units were identified in the USBP El Centro Sector. The soil map units at the site are all classified as nonhydric soils (USDA-NRCS 2007a). Hydric soils are soils that are saturated, flooded, or ponded for long enough during the growing season to develop anaerobic (oxygen-deficient) conditions in their upper part. The presence of hydric soil is one of the three criteria (along with hydrophytic vegetation and wetland hydrology) used to determine that an area is a wetland based on the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987). The soils in the area of the American canal extension have been previously disturbed with canal development and associated activities.

The properties of soils identified in the USBP El Centro Sector are described in **Table 5-1.**

5.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Physiography and Topography. Short- and long-term, minor, adverse impacts on the natural topography of the USBP El Centro Sector could occur as a result of implementing the Project. Minor grading, contouring, and trenching associated with the installation of the fence, patrol roads, access roads, and utilities for lights and other tactical infrastructure will impact approximately 324 acres and could alter the existing topography. The project sites will be regarded and contoured following tactical infrastructure installation. This will minimize modifications to existing flood-flow characteristics.

Geology. Short- and long-term, negligible adverse impacts on geologic resources could occur at locations where bedrock is at the surface and blasting will be necessary to grade for fence placement or patrol and access road development. Geologic resources could affect the placement of the fence or patrol and access roads due to the occurrence of bedrock at the surface, or as a result of structural instability. In most cases, it is expected that project design and engineering practices could be implemented to mitigate geologic limitations to site development.

Soils. Short-term, minor, direct, adverse impacts on soils in the USBP El Centro Sector will be expected as a result of implementing the Project. Soil disturbance and compaction due to grading, contouring, and trenching associated with the installation of the fence, patrol roads, access roads, and utilities for lights and other tactical infrastructure will impact approximately 324 acres. However, much of the soils in the area of the All-American Canal extension have been disturbed, therefore reducing the amount of potential impact to undisturbed soils. Soils displaced by fence construction will be properly stockpiled to prevent erosion and

Table 5-1. Properties of the Soil Types Found Throughout the Project Corridor

Name	Type	Slope	Drainage	Hydric	Farmland Importance	Properties
Badland	N/A	30–75 percent	N/A	N/A	N/A	Alluvium derived from mixed sources.
Holtville	Silty clay, wet	0–2 percent	Moderately Well-Drained	No	Prime	Found on basin floors. Permeability is slow.
Imperial	Silty clay, wet	0–2 percent	Moderately Well-Drained	No	Statewide	Found on basin floors. Permeability is very slow.
Imperial-Glenbar	Silty clay loam, wet	0–2 percent	Moderately Well-Drained	No	Statewide	Found on basin floors. Permeability is moderately to very slow.
Indio-Vint Complex	N/A	0–2 percent	Well-Drained	No	Prime	Found on basin floors. Permeability is moderate to moderately rapid.
Meloland	Very fine sandy loam, wet	0–2 percent	Moderately Well-Drained	No	Prime	Found on basin floors. Permeability is slow.
Meloland and Holtville	Loam	0–2 percent	Moderately Well-Drained	No	Prime	Found on basin floors. Permeability is slow.
Rositas	Fine sand	0–2 percent	Somewhat Excessively Drained	No	Statewide	Found on basin floors. Permeability is rapid.
Rositas	Loamy fine sand	0–2 percent	Somewhat Excessively Drained	No	Statewide	Found on basin floors. Permeability is rapid.

Name	Type	Slope	Drainage	Hydric	Farmland Importance	Properties
Superstition	Loamy fine sand	0–2 percent	Somewhat Excessively Drained	No	Prime	Found on basin floors. Permeability is rapid.
Vint	Loamy very fine sand, wet	0–2 percent	Moderately Well-Drained	No	Prime	Found on basin floors. Permeability is moderately rapid.
Vint and Indio	Very fine sandy loams, wet	0–2 percent	Moderately Well-Drained	No	Prime	Found on basin floors. Permeability is moderate to moderately rapid.

Source: USDA-NRCS 2007a
Notes:
No = Not listed as a hydric soil for Imperial County, CA
Yes = Listed as a hydric soil for Imperial County, CA
N/A = Not applicable.

sedimentation and excess soils will be disposed of properly if not utilized during regrading and recontouring activities following installation of the fence. In areas where soils have not been previously disturbed by development of the All-American Canal and associated activities; minor adverse effects on natural soil structure and soil organisms will be expected.

CBP will require the construction contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP) with BMPs, sediment and erosion control plans, and other environmental protection plans for the Project. Increased soil erosion due to the construction activities will be minimized with the implementation of BMPs. Implementing these BMPs will minimize soil erosion impacts in areas of steep slopes, especially in the areas covered by the Badland soil map unit. This map unit is commonly found on 30–75 percent slopes, though the area where this soil type was mapped does not exhibit especially steep topographic relief (TopoZone.com 2007, USDA-NRCS 2007a). Soil disturbance on steep slopes has the potential to result in excessive erosion due to instability of the disturbed soils and high runoff energy and velocity. Adverse effects associated with sediments that could potentially be transported from construction sites and deposited in the All-American Canal and Alamo River will be minimized as a result of implementation of the BMPs. Construction activities expected to directly impact the existing soils as a result of grading, excavating, placement of fill, compaction, and mixing or augmentation necessary to prepare the sites for development of the fence sections and patrol roads and associated utility lines will also be avoided by the proper implementation of the BMPs. Due to the arid

climate of the region, wind erosion could potentially impact disturbed soils in areas where vegetation has been removed. However, following construction activities, the areas disturbed will be revegetated with native species to the maximum extent practicable to reestablish native plant communities and help stabilize soils.

Additional soil disturbance could occur during and following construction. Compaction and erosion of soil will be expected as a result of patrol operations from possible off-road pursuit that could decrease vegetation cover and soil permeability.

The Holtsville silty clay (0–2 percent slopes), Indio-Vint complex (0–2 percent slopes), Meloland very fine sandy loam (0–2 percent slopes), Meloland very fine sandy loam (0–2 percent slopes), Meloland and Holtville loams (0–2 percent slopes), Superstition loamy fine sand (0–2 percent slopes), Vint loamy very fine sand (0–2 percent slopes), and Vint and Indio very fine sandy loams (0–2 percent slopes) are designated as prime farmland soils. None of the areas in the impact corridor is being used for agricultural purposes. The corridor necessary for fence and patrol road development will be linear and limited in extent; therefore, any impacts as a result of the Project to these areas will be considered negligible to minor.

Imperial silty clay (0–2 percent slopes), Imperial-Glenbar silty clay loam (0–2 percent slopes), Rositas fine sand (0–2 percent slopes), and Rositas loamy fine sand (0–2 percent slopes) are designated as farmland soils of statewide importance. None of the areas in the fence corridor on the U.S. side of the border is being used for agricultural purposes. The corridor necessary for border fence and patrol road development will be linear and limited in extent, therefore any impacts as a result of the Project to these areas will be considered negligible to minor.

6. WATER USE AND QUALITY

6.1 HYDROLOGY AND GROUNDWATER

6.1.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Clean Water Act (CWA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for hydrology and groundwater.

Hydrology consists of the redistribution of water through the processes of evapotranspiration, surface runoff, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine evapotranspiration rates, topography which determines rate and direction of surface flow, and soil properties that determine rate of subsurface flow and recharge to the groundwater reservoir. Groundwater consists of subsurface hydrologic resources. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

6.1.2 Affected Environment

***Hydrology*.** The Alamo River, All-American Canal, and Pinto Wash occur in the project corridor, which is in the Salton Sea watershed. The drainage of the project corridor in general flows from south-to-north to the Salton Sea. Substantial quantities of surface water are diverted from the Alamo River to meet agricultural demands in California and Mexico. Most of the water diverted in the Alamo River is returned as treated, partially treated, or untreated wastewater that eventually flows back into the Salton Sea. Overall, the project corridor is located on an extensive plain of arid desert that is gently undulating. The climate is continental desert, is of extreme aridity, and results in high air and soil temperatures. There are typically no summer rains and the average annual precipitation in the area is approximately 2.6 inches. The evaporation rate during the summer season is very high, even more so due to light to moderate winds. Plants in the area are widely dispersed and provide negligible groundcover (Bailey 1995). Reduced groundcover along with steep slopes due to local topography can lead to heavy runoff and high erosion potential during precipitation events. Specifically, the area of the project corridor that contains Badland soil map units, commonly found on 30–75 percent slopes, will be most

vulnerable, though the area where this soil type was mapped by does not exhibit especially steep topographic relief (TopoZone.com 2007, USDA-NRCS 2007a).

Groundwater. The USBP El Centro Sector is in the Imperial Valley Groundwater Basin which has a total surface area of 1,200,000 acres. The basin lies within the southern part of the Colorado Desert Hydrologic Region, south of the Salton Sea. The Sand Hills form the eastern boundary and the impermeable rocks of the Fish Creek and Coyote Mountains form the western boundary. The Salton Sea, the discharge point for groundwater in the basin, forms the northern boundary. The physical groundwater basin extends across the border into Baja California where it underlies a contiguous part of the Mexicali Valley. Major hydrologic features include the New and Alamo rivers, which flow north towards the Salton Sea. The rivers were formed in the mid to late 1800s when the Colorado River occasionally escaped the normal channel and flowed northward towards the present day Salton Sea. The All-American Canal (three branches) and the Coachella Canal also cross over the basin (CADWR 2003).

The Imperial Valley Groundwater Basin has two major aquifers, separated at depth by a semi-permeable aquitard that averages 60 feet in thickness and reaches a maximum thickness of 280 feet. The aquifers consist mostly of alluvial deposits of late Tertiary and Quaternary age. Average thickness of the upper aquifer is 200 feet with a maximum thickness of 450 feet. The lower aquifer averages 380 feet in thickness with a maximum thickness of 1,500 feet. As much as 80 feet of fine-grained, low permeability prehistoric lake deposits have accumulated on the nearly flat valley floor and cause locally confined aquifer conditions. The basin could have saturated sedimentary deposits as thick as 20,000 feet (CADWR 2003).

The San Andreas, Algodones, and Imperial faults are present within the Imperial Valley Groundwater Basin, but data on whether these faults control groundwater movement are lacking. The only known barriers to groundwater flow are the lake deposits of clay that obstruct downward seepage of surface waters in the central and western part of the basin. Recharge is primarily from irrigation return. Other recharge sources are deep percolation of rainfall and surface runoff, underflow into the basin, and seepage from unlined canals which traverse the valley. The basin might have saturated sedimentary deposits as thick as 20,000 feet. The total storage capacity for this basin is estimated to be 14,000,000 acre-feet. In general, groundwater beneath the basin is unusable for domestic and irrigation purposes without treatment because of high total dissolved solids concentrations. Groundwater in areas of the basin has higher than recommended levels of fluoride and boron (CADWR 2003).

6.1.3 Direct and Indirect Effects of the Project

Hydrology. Short- and long-term negligible adverse impacts on the hydrology of the Alamo River will be expected to occur as a result of grading and contouring in the project corridor. Grading and contouring will be expected to alter the

topography and remove vegetation on a small portion of Section B-4 within the floodplain of the Alamo River, which could in turn increase erosion potential and increase runoff during heavy precipitation events. Revegetating the area with native vegetation following construction along with other BMPs to abate runoff and wind erosion could reduce the impacts of erosion and runoff. Additionally, the small increase in impervious surface within the floodplain will result in negligible increases in the quantity and velocity of storm water flows to the Alamo River. BMPs will be developed as part of the SWPPPs to manage storm water both during and after construction. Therefore, effects will be expected to be negligible.

Groundwater. Short-term, minor, direct, adverse construction-related impacts on groundwater resources will also be expected. During construction, water will be required for pouring concrete, watering of road and ground surfaces for dust suppression during construction, and for washing construction vehicles. Water use for construction will be temporary (approximately 9 months), and the volume of water used for construction will be minor when compared to the amount used annually in the area for municipal, agricultural, and industrial purposes. Water not lost to evaporation from watering of surfaces during construction will potentially contribute to aquifer recharge through downward seepage.

The potential for short-term negligible adverse effects on groundwater related to an increase in storm water runoff will also occur. Implementation of storm water and spill prevention BMPs developed consistent with the SWPPPs and other applicable plans and regulations will minimize potential runoff or spill-related impacts on groundwater quality during construction.

6.2 SURFACE WATERS AND WATERS OF THE UNITED STATES

6.2.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the CWA, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for surface waters and waters of the United States.

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

Waters of the United States are defined within the CWA, as amended, and jurisdiction is addressed by the USEPA and the USACE. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that

are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries (USDOJ 2007).

Wetlands and riparian habitats represent some of the most ecologically important and rare vegetation communities on desert landscapes. They provide keystone habitat for a wide array of plant and animal species including resident and migrating birds, amphibian and fish species, mammals, and insects. Vegetation production and diversity are usually very high in and around these mesic to aquatic sites, with many plant species adapted only to these unique environments. In addition, wetlands and riparian zones provide a variety of hydrologic functions vital to ecosystem integrity. These include water filtration of sediment, groundwater recharge, and nutrient/chemical capture (USFS 1995). Development and conversion of wetlands and riparian zones affects wildlife diversity, carrying capacity, and hydrologic regime. Changes to and removal of wetlands can cause effects that are proportionally greater than elsewhere in an ecosystem (Graber 1996).

Wetlands have been defined by agencies responsible for their management. The term “wetland” used herein, is defined using USACE conventions. The USACE has jurisdiction to protect wetlands under Section 404 of the CWA using the following definition:

> . . . areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3[b]). Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands have three diagnostic characteristics that include: (1) over 50 percent of the dominant species present must be classified as obligate, facultative wetland, or facultative, (2) the soils must be classified as hydric, and (3) the area is either permanently or seasonally inundated, or saturated to the surface at some time during the growing season of the prevalent vegetation (USACE 1987).

Wetlands are protected as a subset of “the waters of the United States” under Section 404 of the CWA. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands).

6.2.2 Affected Environment

Surface Water

The Alamo River, All-American Canal, and Pinto Wash which all three occur in the project corridor, are in the Salton Sea watershed, which is bordered on the

northwest by the San Gorgonio Mountains, on the west by the San Jacinto and Santa Rosa Mountains and the Peninsular Range, and on the east by the Little San Bernardino and Chocolate Mountains. On the south the watershed includes the Imperial and Mexicali Valleys through which the Alamo and New Rivers flow from Mexico (USBR 2001). The Salton Sea is California's largest lake with a surface area of 243,718 acres (381 square miles) and a surface elevation of 229 feet below sea level (SSA 1997, IID 2005). Its average depth is 31 feet and its maximum depth is 51 feet. It is a federally designated repository to receive and store agricultural, surface, and subsurface drainage waters from the Imperial and Coachella valleys (IID 2005). The annual inflow is estimated at approximately 1,300,000 acre-feet of water carrying approximately 4,000,000 tons of dissolved salt. Salinity within the Salton Sea is approximately 46,000 parts per million (ppm), compared to ocean waters, which average approximately 35,000 ppm (USBR 2001, IID 2005). High salinity levels, when combined with nutrients from agricultural return flows that cause eutrophic conditions, have reduced the wildlife habitat and recreational values of the Salton Sea.

The Alamo River begins as a small stream near the U.S./Mexico international border near and perpendicular to the All-American Canal. The river flows under the canal via a box culvert in Section B-4, then flows northward approximately 60 miles to its discharge point into the Salton Sea. Flows consist of a high percentage of irrigation runoff or wastewater. Daily mean flows over a 40-year period ranged from 45 to 1,140 cubic feet per second (ft^3/s) (LeBlanc et al. 2004). The flow is initially formed and sustained by return irrigation water from the Mexicali Valley where approximately 700,000 acre-feet of pumped groundwater and 1.5 million acre-feet of New Alamo Canal water diverted from the Colorado River at Morales Dam is used to irrigate crops annually (USBR 2005). Pumping of groundwater for irrigation from thick sand and gravel aquifers of the eastern portion of the Mexicali Valley began during the 1950s. Presently, approximately 300,000 acres of irrigated farmland occur in this region of Mexico.

Scrub shrub wetlands are present on the banks of the Alamo River adjacent to the project corridor in Mexico. The wetlands are supported by surface flows and seepage into the groundwater table associated with the Alamo River. The wetlands are characterized primarily by stands of arrow weed (*Pluchea sericea*), short shrubs, and common reed (*Arundo donax*), a tall grass. Tamarisk or salt-cedar (*Tamarix ramosissima*), an invasive shrub, has also become established on Alamo River wetland margins.

Alamo River water was sampled at the international boundary and analyzed for various parameters in the early 2000s (LeBlanc et al. 2004). Suspended sediment concentration was determined from a point sample and bottom sediment sampling was conducted by compositing five grab samples. At Harris Road, downstream from the international border, the Alamo River discharge was 440 ft^3/s. The water temperature at this site was 19.1 degrees Celsius (°C), specific conductivity measured 2,660 microsiemens per centimeter (cm), and the dissolved oxygen was 9.8 ppm. The composition of suspended solids in Alamo

River water at the international border measured 53 percent fines and 47 percent sand and the concentration of suspended solids measured 27 ppm.

During 2003, the dissolved concentrations of current-use pesticides were analyzed at the Alamo River international boundary site (LeBlanc et al. 2004). Eptam was detected at a concentration of 28.7 nanograms per liter (ng/L). Eptam (carbamothioic acid, dipropyl-, S-ethyl ester) is an herbicide used to control annual grasses and forbs and some perennial forbs in agricultural fields (Spectrum undated). It is released directly into the environment through its application on agricultural fields and can be transported by water to rivers and lakes. Both microbial degradation and volatilization to the atmosphere reduce the amount of herbicide potentially transported by water.

Organic carbon was determined to be 14 percent in suspended sediments and 0.2 percent in bed sediments where the Alamo River flows across the international boundary (LeBlanc et al. 2004). Fines at this site ranged from 53 percent in suspended sediments to 9 percent in bed sediments. Pesticide concentration measured 40.5 nanograms per gram (ng/g) of p,p'−dichlorodiphenyl-dichloroethylene (DDE) in the suspended sediments and 6.2 ng/g of p,p'–DDE in the bed sediments. DDE enters the environment as a breakdown product of DDT (dichlorodiphenyltrichloroethane), a pesticide once widely used to control insects in agriculture and insect disease vectors (ATSDR 2002). DDE builds up in the tissues of plants and in the fatty tissues of fish, birds, and mammals; it does not dissolve easily in water.

All-American Canal. The All-American Canal flows generally from east to west across Sections B-3 and B-4 in the project corridor. The Imperial Irrigation District covers a management area of approximately 1,061,637 acres and provides agricultural and domestic/industrial water via the All-American Canal to irrigate approximately 433,226 acres of farmland in the Imperial Valley (USBR 2001, IID 2005). The All-American Canal was authorized by the Boulder Canyon Project Act (P.L. 70-642), constructed during the 1930s, and delivered water by the 1940s (USBR 2005). It is apportioned to deliver 3,100,000 acre-feet of water annually to the Imperial Irrigation District agricultural service area. Its diversion capacity is 15,155 ft^3/s, the water depth is 21 feet, and the average bottom width is 160 feet (Stene undated). Electricity is also generated in the Imperial Irrigation District system by directing canal flows through electric utility plant turbines located at (1) Brawley, (2) Coachella, (3) Double Weir, (4) Drop 1, (5) Drop 2, (6) Drop 3, (7) Drop 4, (8) Drop 5, (9) East Highline, (10) El Centro, (11) Pilot Knob, (12) Rockwood, and (13) Turnip (EIA 2000).

In the Imperial Valley, only surface water from the All-American Canal is applied to agricultural fields. Water is distributed via a network of canals and ditches to irrigate fields where a portion is consumed by plants, while the remainder percolates through the soil and is captured by tile drains at about 6 to 10 feet deep. This unused water contains dissolved salts and agricultural chemicals and is discharged directly to the Alamo and New rivers which flow to the Salton Sea.

Further north, the unused water is discharged directly from field drains into the Salton Sea (USBR 2001).

Of the 2,519,078 acre-feet of water transported during 2005 by the Imperial Irrigation District via diversion at the Imperial Dam, 97 percent was used for irrigation (433,321 acres) and 3 percent was used for residential and industrial applications. Imperial Valley irrigated agriculture is a $1,286,066,000 industry entirely dependent on Colorado River water (IID 2005). The most important crops grown in terms of acres planted and irrigated are alfalfa (*Medicago sativa*), Bermuda grass (*Cynodon dactylon*), Sudan grass (*Sorghum* spp.), wheat (*Triticum* spp.), lettuce (*Lactuca* spp.), sugar beets (*Beta* spp.), carrots (*Daucus* spp.), Klein grass (*Panicum coloratum*), broccoli (*Brassica* spp.), onions (*allium*), and cotton (*Gossypium* spp.). Water delivered to the Imperial Valley for agriculture in 2005 totaled 2,465,013 acre-feet. Conservation savings of water using canal lining, reservoirs, lateral interceptors, 12-hour deliveries, system automation and non-leak gates, and irrigation water management totaled 101,940 acre-feet (IID 2005).

In 2003, the Imperial Irrigation District entered into a package of decisions and agreements known collectively as the Quantification Settlement Agreement and Related Agreements, which include long-term transfer of water to the San Diego County Water Authority and the Coachella Valley Water District (IID 2007). By 2026, the Imperial Irrigation District must conserve and transfer 303,000 acre-feet of Colorado River water annually, approximately 10 percent of the total annual diversion. Transferred water is to be generated through efficiency conservation, which includes both improvements in the Imperial Irrigation District's delivery system and improvements in on-farm irrigation practices.

The All-American Canal surface flows can be a dangerous barrier for cross-border violators and they represent somewhat of an "attractive nuisance" in that flowing water within this desert environment is unusual. The canal system is posted on both sides of the border with danger signs warning of the deep, fast-flowing water and with "No Trespassing" signs.

Pinto Wash. The Pinto Wash, which crosses Section B-1, drains into the United States towards the northeast and is mapped as a 100-year floodplain by Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRMs). Pinto Wash is normally dry and is subject to flash flooding when torrential rainstorms occur in the drainage area. There are no vegetated wetlands associated with Pinto Wash in the project corridor; rather it supports sparse tall shrubs of creosotebush, honey mesquite, and ironwood.

Wetland Riparian Areas and Other Waters of the United States. Based on preliminary site assessments, vegetated wetland and riparian habitats occur in and in proximity to the eastern one-fourth of Section B-2 and in Section B-4 and are supported by surface flows and underground seepage from the Alamo River,

the All-American Canal, and an irrigation ditch in Section B-2. Perennial surface water flows only occur in the Alamo River and the All-American Canal.

Pinto Wash, and tributaries to the wash in Section B-1, and a few disturbed washes within an abandoned gravel pit on the western end of Section B-2 convey ephemeral flows in response to storm events.

Wetland and riparian habitats and vegetation stands sampled in the field during the preliminary site assessment are discussed in this section and are also presented as plant associations in **Chapter 7.1**. Several trees of Fremont cottonwood (*Populus fremontii*), Goodding willow (*Salix gooddingii*), Athel tamarisk (*Tamarix aphylla*), and date palms (*Phoenix dactylifera*) were observed in proximity to the project corridor in Sections B-2 and B-4 mostly in Mexico. Individual wetland plant species named in this report were provided a wetland indicator code appropriate for California (USDA-NRCS 2007b), as described in **Table 6-1**.

Vegetation alliances and plant associations (NatureServe 2007) that have been identified within proximity to the project corridor include aquatic bed, herbaceous graminoids, and shrublands, as follows:

- Spiral Ditchgrass (*Ruppia cirrhosa*), Beaked Ditchgrass (*Ruppia asserin*) Permanently Flooded Herbaceous Vegetation
- Common Reed Temporarily Flooded Herbaceous Alliance
- Bermuda Grass Herbaceous Alliance
- Arrow Weed Seasonally Flooded Shrubland
- Salt-cedar species Semi-natural Temporarily Flooded Shrubland Alliance.

Aquatic Wetlands. Submerged beds of ditchgrass and water milfoil (Myriophyllum spicatum), which are both types of obligate wetland (OBL) plants occur within the All-American Canal along its south bank. The beds are dense, up to 100 percent cover, submerged to within 0.25 meters (m) of the water surface, and provide habitat for many aquatic insects and small fish. Regionally, this wetland type occurs in systems with saline soils and in areas of low precipitation; it has very specific water chemistry requirements (NatureServe 2007).

Herbaceous Wetlands and Riparian Types. The tall grass, common reed (FACW) and the short grass, Bermuda grass (FAC) have become established on the banks of the All-American Canal, in the ditch between the canal bank and the berm that demarcates the international border, and in the irrigation ditch in Section B-2.

Table 6-1. Wetland Indicator Status

Wetland Species Type	Indicator Code	Definition of Indicator Code
Obligate Wetland	OBL	Occurs almost always (estimated probability 99%), under natural conditions, in wetlands.
Facultative Wetland	FACW	Usually occurs in wetlands (estimated probability 67%–99%), but occasionally found in nonwetlands.
Facultative	FAC	Equally likely to occur in wetlands or nonwetlands (estimated probability 34%–66%).
Facultative Upland	FACU	Usually occurs in nonwetlands (estimated probability 67%–99%), but occasionally found in wetlands (estimated probability 1%–33%).
Obligate Upland	UPL	Occurs in wetlands in another region, but occurs almost always (estimated probability 99%), under natural conditions, in nonwetlands in the regions specified. If a species does not occur in wetlands in any region, it is not on the National List.
No Agreement	NA	The regional panel was not able to reach a unanimous decision on this species.
No Indicator	NI	Insufficient information was available to determine an indicator status.
No Occurrence	NO	The species does not occur in that region.
---	FAC modifiers: +, -, *	(+) indicates a frequency toward the higher end of the category (more frequently found in wetlands). (-) indicates a frequency toward the lower end of the category (less frequently found in wetlands). (*) identifies tentative assignments based on limited information from which to determine the indicator status.

Source: USDA-NRCS 2007b

Common reed also occurs along both banks of the Alamo River south of the international border in Mexico. The forb alkali mallow (*Malvella leprosa*) (FAC*) occurs as one small stand between the canal bank and the international border berm of Section B-4.

Common reed is a tallgrass that has colonized reaches of the canal and ditch banks where it is sometimes codominant with the short shrub arrow weed (FACW). At a few canal-bank sites, common reed stands also support small patches of the graminoid, broad-leafed cattail (*Typha latifolia*) (OBL). In

proximity to Section B-4, common reed stands are the second most common vegetation type in terms of area occupied, next to more extensive stands of arrow weed. The stands are usually monotypic; however, patches of Bermuda grass or heliotrope (*Heliotropium* sp.) could occasionally occur along the margins of the tall grass. Stands are dense (up to 80 percent cover on the more mesic canal bank) to moderate in terms of cover (up to 45 percent) in the drier landscape of the adjacent ditch. It is likely that common reed became established on the permanently saturated canal banks (above ordinary high water) historically, then spread vegetatively under the canal bank road into the adjacent ditch via deep, stout rhizomes. It is unclear whether the principal water source currently is the permanently saturated canal bank or if the common reed plants within the ditch have independently established groundwater contact. Soil investigations within the ditch indicate that saturation does not occur in close proximity to the surface in these areas.

Bermuda grass is a nonnative/introduced shortgrass that has become established in the ditch between the canal bank and the international border berm and along the ditch in Section B-2. Two moderately large stands with up to 15 percent cover occur just west of the Alamo River, where they occupy the canal bank and ditch up to the berm on the international border. These stands possibly became established due to transfer of soil containing seeds or rhizomes, directly from seed blown onto the site which sprouted during a moist period, or plants on the moist soil of the canal banks that spread under the canal bank road into the adjacent ditch via rhizomes. Within the Imperial Irrigation District, Bermuda grass/hay is the second most commonly irrigated agricultural crop in terms of acreage.

Scrub-Shrub Wetland and Riparian Types. The native short (1–3 meters tall) shrub arrow weed and the nonnative, invasive tall (2–6 meters tall) shrub tamarisk or salt-cedar (FAC) represent the most common woody species within Section B-4. They occur on the banks of the All-American Canal and Alamo River and occupy the ditch and berms between the canal and the international border. Together, they provide the most common cover in the project corridor. West of the Alamo River, shrub stands are almost entirely composed of arrow weed. East of the Alamo River, stands of tamarisk become more common, but they typically support an understory of arrow weed.

Arrow weed short shrubs from 1–3 meters tall line the entire north bank of the All-American Canal and most of the south bank, providing up to 80 percent cover and sometimes more in this mesic habitat. On the south canal bank, arrow weed shrubs are occasionally replaced by narrow linear stands of common reed and the two species occasionally intermingle in variably sized ecotones. Arrow weed commonly occurs in the broad ditch between the canal bank and the berm on the international border where the shrubs are of shorter stature (1–1.5 meters tall) and cover values range primarily from 10–45 percent and in some places up to 75 percent.

Wherever arrow weed stands occur they are monotypic probably because of the amount of shade cast on the ground surface which precludes establishment of other plant species. When other species occur (common reed, tamarisk, alkali mallow) they provide less than 1 percent cover. On the eastern portion of Section B-4 within this shrubs' distribution, it becomes understory to codominant with tamarisk shrubs and forms a narrow ecotone with creosotebush and fourwing saltbush where the desert uplands and riparian lowlands meet. This ecotone and transition to creosotebush-dominated desert uplands occurs where the All-American Canal diverges to the north.

It is likely that arrow weed became established on the saturated canal banks from seed then spread to the drier habitats south of the canal via underground rhizomes. It is unknown if the majority of water supporting arrow weed stands is provided directly from plants along the canal bank or if individual shrubs within the drier ditch have tapped the groundwater table resulting from seepage through the riprap-lined earth canal. Soil investigations within the ditch indicate that saturation does not occur in close proximity to the surface in these areas.

Tamarisk or salt-cedar tall shrubs up to 5 meters tall have become established east of the Alamo River. The soils occupied by tamarisk tall shrubs appear to be more alkaline or saline than those occupied by arrow weed short shrubs. However, there is considerable mixing of the two vegetation types and most stands of tamarisk, which provide from 50–80 percent cover, also have low understory cover by arrow weed ranging from 5–15 percent cover.

Near the terminus of the riparian vegetation distribution in Section B-4, a moderately large playa has formed on the international boundary. Although mostly devoid of vegetation across the playa bottom, tamarisk, including a stand of Athel tamarisk, has become established around the playa margin. Some of these tall shrubs have attained heights up to 6–7 meters. The playa has been disturbed by agriculture and activities associated with development of the All-American Canal. Levees and berms occur in the northern and eastern sections of the playa and in Mexico to the south. A drop structure occurs in the northeastern corner of the playa which directs flow under the All-American Canal to an irrigation ditch on the north side of the canal. Drainage channels and irrigation canals bordering and within the playa in Mexico likely direct flows into or out of the playa.

Jurisdictional Wetlands and Other Waters of the United States within the Project Corridor. Field surveys were conducted after the preliminary site assessments in Sections B-1, B-2, B-4, B-5A, and B-5B on January 17 through January 19, 2008, to delineate jurisdictional wetlands and other waters of the United States within the project corridors. Delineations were also conducted along access roads and staging areas associated with the fence alignments. Formal delineations were conducted within a 150-foot corridor associated with the fence alignments, 60 feet to either side of access roads, and within staging areas.

Determination of the occurrence and extent of jurisdictional wetlands and other waters of the United States was based on the application of procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y−87−1 (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region,* Technical Report ERDC/EL TR-06-16 (USACE 2006). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Determination of the extent of jurisdictional washes and other waters of the United States in the project areas was based on characterization of the landward extent of the ordinary high water mark (OHM). Indicators used to determine the occurrence and extent of jurisdictional washes included the following:

- The presence of developed channels, typically 2 feet or greater in width
- The occurrence of an OHM
- The absence of fine sediments along flow paths, distinct changes in the vegetative assemblage, or larger or more dense vegetation than surrounding areas
- The presence of cut banks
- The presence of litter, debris, or rack lines
- Occurrence of desiccation cracks or other indicators of hydrology
- Other indicators of the occurrence of intermittent water flow regimes.

All wetlands and other waters of the United States within the projects areas were delineated and the determination was provided to the USACE-Los Angeles District.

Table 6-2 provides the section locations, wetland or other waters of the United States type, the delineated acreage of each identified wetland or other waters of the United States and potential acreages of impacts in Sections B-1, B-2 and B-4. No wetlands or other waters of the United States were identified in Sections B-5A or B-5B.

Based on the field surveys, 8 wash channels, designated as WL 1 through WL 7, cross the project alignment in Section B-1. Wash WL 1 which flows to the north is a main channel of the Pinto Wash. Vegetation occurring in association with the wash is characterized by catclaw acacia (*Acacia greggi*), creosote bush, burrobush (*Ambrosia dumosa*), and snake weed (*Gutierrezia* sp.). Washes WL 2 through WL 7 are unvegetated tributaries that flow to the north into Pinto Wash.

One wetland (WL 9) was delineated in Section B-2. WL 8 is an unvegetated wash that flows to the northeast through an abandoned gravel pit. The channel of the wash has been modified in places as a result of past gravel pit activities and was determined to be non-jurisdictional by USACE-Los Angeles District. WL 9 is a palustrine emergent wetland associated with seepage from an irrigation ditch near the eastern end of Section B-2. Vegetation in the narrow emergent wetland is characterized by phragmites (*Phragmites australis*), broad-leaved cattail (*Typha latifolia*), arrow weed, and tamarix.

Three wetlands or other waters of the United States (WL 10 through WL 12) were identified in Section B-4. WL 10 is the All-American Canal. The canal borders the project corridor on its northern side for approximately 6 miles in the western

Table 6-2. Wetlands and Other Waters of the United States, Delineated Acreages and Potential Impact Acreages in USBP El Centro Sector Sections B-1, B-2, and B-4

Wetland or Other Waters of the United States Identification	Fence Section	Wetland or Other Waters of the United States Type	Delineated Acreage	Potential Impacted Acreage
WL1	B-1	Wash	4.11	0.45
WL2	B-1	Wash	0.06	0.02
WL3	B-1	Wash	0.08	0.01
WL4	B-1	Wash	0.08	0.03
WL5W	B-1	Wash	0.04	0.01
WL5E	B-1	Wash	0.03	
WL6	B-1	Wash	1.17	0.24
WL7	B-1	Wash	0.07	0.02
WL8	B-2	Wash	0.07	0.00
SW1	B-2	Drainage Channel	1.14	0.00
WL9	B-2	Seepage	1.08	1.08
WL10	B-4	Canal	122.95	0.00
WL11	B-4	Man-made Playa	84.74	6.24
WL12	B-4	Riverine/emergent (Alamo River)	0.52	0.38
Totals			**216.14 acres**	**8.48 acres**

section of B-4. Submerged beds of ditchgrass and water milfoil occur within the All-American Canal in areas along its south bank. Common reed and arrow weed are common on the banks of the canal. WL 11 is a man made playa

located near the eastern end of B-4. The central area of the playa is primarily devoid of vegetation, while the perimeters are characterized by near monotypic stands of tamarisk. There was an open water component of the playa located in its southeastern section at the time of the field survey. The open water component is primarily in Mexico. The playa appears to receive discharge flows form irrigation canals originating in both the United States and Mexico (see additional description above). WL12 is the Alamo River between the United States and Mexico Border and the drop inlet that directs river flow under the All-American Canal. The river emerges on the north side of the All-American Canal then flows to the north. Common reed and salt cedar occur in association with the river on the south side of the All-American Canal. There were no wetlands or other Waters of the United States identified in the project assessment areas for USBP El Centro Sections B-5A or B-5B. No wetland surveys were conducted in Section B-3.

6.2.3 Direct and Indirect Effects of the Project

***Surface Waters, Wetlands, and Other Waters of the United States*.** Minor short- and long-term impacts on washes in Section B-1 will be expected. The tactical infrastructure for Section B-1 will consist of a primary vehicle fence, patrol road, access roads, and staging areas. The primary vehicle fence and patrol road will cross eight wash channels in Section B-1. No wetlands or other Waters of the United States were identified in close proximity to access roads and staging areas in B-1. Patrol roads currently exist along much of the alignment and temporary vehicle fence is already in place along the eastern one third of Section B-1. Placement of permanent primary vehicle fence, patrol roads, or upgrades to existing patrol roads across wash channels will result in short-term impacts on the washes as a result of fence and access road construction and upgrades. CBP will require the construction contractor to prepare a SWPPP, sediment and erosion control plans, and other environmental protection plans for the Project (discussed below) which will minimize potential for adverse effects on the washes. Long-term effects will be associated with the placement of the fence and potential fill associated with patrol road development or upgrades to existing patrol roads. The maximum potential area of long-term impacts in Section B-1 is expected to be 0.8 acre. Impacts on the washes will be avoided to the maximum extent practicable.

Minor short- and long-term impacts on wetlands or other waters of the United States will be expected in Section B-2. Tactical infrastructure for Section B-2 will consist of a primary pedestrian fence, lighting, patrol road, and access roads. One emergent wetland (WL 9) occurs along an irrigation channel bank at the eastern end of Section B-2. WL 9 borders the fence alignment on its southern side. Direct impacts on WL 9 will be expected as a result of grading and the placement of fill necessary to accommodate development of the tactical infrastructure. The maximum potential area of long-term impacts in Section B-2 is expected to be 1.08 acres. Short-term indirect impacts associated with fence and access road construction will also be expected as a result of potential

erosion and resultant sedimentation associated with land disturbance during tactical infrastructure development. Erosion and sediment controls and storm water management practices will be implemented during and following construction to minimize potential for adverse effects on WL 9. Any impacts on the wetlands or other waters of the United States will be avoided to the maximum extent practicable.

Moderate short- and long-term adverse impacts on wetlands and other waters of the United States will be expected in Section B-4. Tactical infrastructure for Section B-4 will consist of a primary pedestrian fence, lighting, patrol road, access roads, and staging areas. The All-American Canal (WL 9) borders the northern boundary of the B-4 alignment for approximately 6 miles on its western side, and a man made playa (WL 10) occurs along the alignment in its eastern section. In addition, a riverine/emergent wetland occurs in association with the Alamo River where it is diverted under the All-American Canal in Section B-4. No direct impacts will be expected to the All-American Canal or associated wetland habitats as a result of the Project. Erosion and sediment controls and storm water management practices will be implemented during construction to minimize potential for adverse effects on water quality and aquatic habitats in the canal.

The tactical infrastructure alignment will cross approximately 4,500 feet of a 164 acre (84 acres in the United States) disturbed playa on the United States and Mexico Border in the eastern section of B-4. An approximately 20-acre staging area was initially proposed for the playa. After wetland delineations and consultation with the USACE-Los Angeles District the construction staging area was moved to reduce potential impacts on the area. Long-term impacts on the playa will occur as a result of the placement of fill to accommodate fence and patrol road placement. The fence and patrol road will be designed to minimize the amount of necessary fill, and to allow existing flow and drainage in the playa to continue. The maximum potential area of long-term impacts to WL 11 is expected to be 6.24 acres. Impacts on the playa will be avoided to the maximum extent practicable.

The primary pedestrian fence will also cross the Alamo River just south of where it is diverted under the All-American Canal. Long-term impacts to WL 12 will occur as a result of the placement of fill to accommodate the fence. The fence will be designed to minimize the amount of necessary fill, and to allow existing flow and drainage in the river to continue. The maximum potential area of long-term impacts to WL 12 is expected to be 0.38 acres. Impacts on the Alamo River will be avoided to the maximum extent practicable. Implementation of the Project will be expected to have minor short-term, adverse effects on surface water quality as a result of potential erosion and associated transport of sediments into adjacent surface waters.

Adverse effects on jurisdictional wetlands, washes, and other waters of the United States will be avoided or minimized to the maximum extent practicable.

Delineations of wetlands and other waters of the United States were completed in January 2008 and provided to the USACE-Los Angeles District. The delineations and associated analysis identified 8.48 acres of potential jurisdictional wetland and other waters of the United States impacts. A wetlands mitigation and restoration plan will be developed to compensate for unavoidable impacts on wetlands not previously subject to a wetlands mitigation plan.

6.3 FLOODPLAINS

6.3.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the CWA, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and on floodplains.

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that supports it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and a diversity of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body (FEMA 1986).

Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by FEMA, which defines the 100-year floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

6.3.2 Affected Environment

According to the March 15, 1984, FEMA FIRM Panel No. 0600651025B for Imperial County, California, a small portion of the project corridor for B-4 is within the 100-year floodplain associated with the banks of the Alamo River where it emerges from a culvert under the northern side of the All-American Canal and

continues its flow north to the Salton Sea (FEMA 1984). Based on review of the FIRM for the project area, the All-American Canal and areas south to the United States border are outside of the 100-year floodplain.

6.3.3 Direct and Indirect Effects of the Project

Negligible adverse impacts on floodplain resources will occur as a result of the Project. According to the FEMA FIRM Panel No. 0600651025B, it will be possible to avoid adverse impacts on the 100-year floodplain associated with the Alamo River by limiting construction activities to the south of the All-American Canal and north of the U.S./Mexico international border in this portion of the USBP El Centro Sector. USBP has determined that due to the proximity of the All-American Canal and the south-to-north-flowing Alamo River on the Mexican side of the border, this short section of the tactical infrastructure in Section B-4 cannot be practicably located outside the floodplain. .

Erosion and sediment control and storm water management practices will be implemented during and after construction. Adverse effects on floodplain resources will be minimized.

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7. BIOLOGICAL RESOURCES

7.1 VEGETATION RESOURCES

7.1.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts and mitigations for vegetation resources.

Vegetation resources include native or naturalized plants and serve as habitat for a variety of animal species. Wetlands are discussed in **Chapter 6**. This section describes the affected environment for native and nonnative vegetation followed by potential impacts on those resources from the Project. This analysis is based on site surveys conducted in September and October 2007. More detailed information on vegetation resources, including vegetation classification, species observed, and the survey methodology is contained in the Biological Survey Report (see **Appendix D**).

7.1.2 Affected Environment

The vegetation in the El Centro Sector of southern California has generally been classified under the Dry Domain (300), Tropical / Subtropical Desert Division (320) of Bailey (1995). The project area is more finely classified as the American Semidesert and Desert Province (322). The *Jepson Manual* (Hickman 1996) describes vegetation geography using combined features of the natural landscape including natural vegetation types and plant communities, and geologic, topographic, and climatic variation. This geographic system places the project area in the Desert Province and Sonoran Desert Region (also referred to locally and regionally as the Colorado Desert).

Occurring within the Salton Trough, the drainage of the project area in general and the Alamo River located within Section B-4, flows from south-to-north to the Salton Sea. Overall, the project area is located on an extensive plain of arid desert that is gently undulating. Bailey (1995) describes the vegetation pattern as dry-desert, a class of xerophytic plants that are widely dispersed and provide negligible ground cover. The climate is continental desert, is of extreme aridity, and results in high air and soil temperatures. Summers are long and hot however the brief winter is moderate in terms of temperature. There are typically no summer rains and the average annual precipitation of the area is approximately 2.6 inches. The evaporation rate during the summer season is very high, even more so due to light to moderate winds.

NatureServe (2007) has defined ecological systems to represent recurring groups of biological communities that are found in similar physical environments and are influenced by similar dynamic ecological processes such as fire or flooding. Ecological systems represent classification units that are readily identifiable by conservation and resource managers in the field. The ensuing vegetation description for the project area was prepared in the framework of ecological systems that include (1) Sonora – Mojave Creosotebush – White Bursage Desert Scrub, (2) North American Warm Desert Active and Stabilized Dune, (3) North American Warm Desert Pavement, (4) North American Warm Desert Playa, (5) North American Warm Desert Riparian Woodland and Shrubland, (6) North American Warm Desert Riparian Mesquite Bosque, (7) North American Warm Desert Wash, and (8) North American Arid West Emergent Marsh.

Habitats observed, sampled, and photographed within the project corridor range from active sand dunes of the Imperial Dune system, Signal Mountain toeslopes, the ephemeral Pinto Wash, and saturated and aquatic types of the All-American Canal. Habitats of the easternmost portion of the project receive some form of regular or intermittent disturbance that ranges from camping and all-terrain vehicle use in the desert upland types of Sections B-5A and B-5B to berm construction and canal bank clearing between the border and the canal in Section B-4. Much of the habitat of Sections B-4, B-5A, and B-5B is strewn with trash left by illegal aliens making border crossings and by seasonal recreationists.

Several areas of the USBP El Centro Sector corridor are unvegetated due to development and disturbance, making them vulnerable to nonnative plant species establishment. Unvegetated sites included access roads within all sections, power line and tower access roads and construction sites (Section B–5B), a large area cleared by the Imperial Irrigation District to reclaim canal seepage on Section B-5B, a natural-appearing playa on Section B-4, and excavations and berms along Sections B-2 and B-4. On the eastern terminus of Section B-5B, active sand flats and dunes support no to <1 percent vegetative cover. An unvegetated playa approximately midway along Section B-4, east of the Alamo River, is devoid of vegetation due to seasonal flooding and accumulation of salts. Berms and ditches along the western portion of Section B-4 are often unvegetated and the soil appears compacted. The Imperial Irrigation District is currently undertaking canal seepage recovery resulting in many acres of complete surface disturbance resulting in vegetation removal and precluding the establishment of vegetation at this time. Agricultural fields occur along the eastern terminus of Section B-2.

An access road is usually present adjacent to the international border of Sections B-1 (east and west portions), B-2 (eastern one-half), B-4, B-5A, and B-5B and along the All-American Canal, in addition to electrical power transmission line access and maintenance roads constructed within Section B-5B. For the length of Sections B-5A and B-5B, unlimited camping and all-terrain vehicle access is

permitted, typically during the cooler months of the year, resulting in and maintaining additional unvegetated landscape. The BLM estimated that recreation visits to the Buttercup Campground adjacent to Section B-4 as exceeds 108,000 annually (BLM 2003a).

Vegetation of the El Centro Sector corridor consists of sparse sand plains, desert washes, sand dune, and creosotebush scrub communities on Section B-1, the western two-thirds of Section B-2, the eastern one-third of Section B-4 and for the entirety of Sections B-5A and B-5B. Denser wetland and riparian communities occur on the eastern end of Section B-2 and the western two-thirds of Section B-4. Project-related effects on wetland and riparian plant communities of Sections B-2 and B-4 are presented under **Chapter 6.2**, *Waters of the United States,* and are not discussed further here.

The western end of Section B-1, west of Pinto Wash, supports sparse creosotebush scrub flats or plains. Pinto Wash contains sparse woodlands of creosotebush, honey mesquite, and ironwood tall shrubs and small trees. Section B-1 east of Pinto Wash represents diverse topography of flats, slopes, rocky outcrops, small desert washes, and small sand dunes dominated by sparse creosotebush, white bursage, and shrubby coldenia. The west end of Section B-2 is located on the toeslope of Signal Mountain and is characterized by sparse creosotebush and white bursage shrubs on the uplands and a mixed shrub and herbaceous community in a wash that occurs at the base of the mountain and supports honey mesquite, ocotillo, white bursage, and creosotebush. The eastern portion of Section B-2 is heavily disturbed by road maintenance or supports ditchbank wetlands and agricultural crops. The eastern one-third of Section B-4 supports sparse creosotebush shrubs associated with fourwing saltbush, longleaf jointfir, and white bursage where sandier soils occur. Scattered areas of gravel-armored desert pavement are interspersed and support sparse creosotebush shrubs with herbaceous desert annuals in years with sufficient precipitation for the seeds to germinate.

Section B-5A and the western three-fourths of Section B-5B support sparse creosotebush shrubs associated with longleaf jointfir where sandier soils occur. Scattered areas of gravel-armored desert pavement are interspersed and support sparse creosotebush shrubs with herbaceous desert annuals in years with sufficient precipitation for the seeds to germinate. The eastern one-fourth of Section B-5B occupies active sand dunes on the edge of the Imperial Sand Dune system that are devoid of vegetation; support sparse longleaf jointfir shrubs; or support sparse creosotebush, longleaf jointfir, and desert buckwheat shrubs. Sections B-5A and B-5B in their entirety lie within the BLM's Buttercup Recreation Management Area, designated Multiple-use Class I "Intensive" and is used for camping, off-road vehicle (ORV) riding, sightseeing, commercial vending, education, filming, and ROWs (BLM 2003a). A detailed description of vegetation resources can be found in the Biological Survey Report (see **Appendix D**).

7.1.3 Direct and Indirect Effects of the Project

Under the Project, new boundary roads and construction access will occur and the existing international border access road segments will be widened from approximately 16 feet to approximately 20 feet resulting in the loss of approximately 5.3 acres of sparse creosotebush shrub communities corridor-wide; approximately 3.4 acres of desert wash vegetation in Pinto Wash of Section B-1; and approximately 8.3 acres of active sand dune communities adjacent to Sections B-4, B-5A, and B-5B. Additional loss of habitat resulting from clearing of lay-down areas for construction materials and maintenance and storage areas for heavy equipment will be minimal as previously disturbed areas will be selected for these functions to the extent practicable. Effects of Colorado Desert vegetation removal will be moderate, adverse, and long-term due to the highly disturbed condition of the entire B-5A and B-5B corridor and the large amount of similar vegetation present in the region. Sites within the corridors that are disturbed temporarily during construction could re-vegetate with annual plant species (seasonally and during moist precipitation cycles) resulting in minor beneficial and adverse, short- and long-term effects due to provision of food sources and ground cover for wildlife. The potential spread of nonnative species during construction and operation will be mitigated by the implementation of BMPs; therefore, the Project will not substantially impact vegetation through the establishment of invasive species.

Revegetation will be considered unlikely to occur due to the around-the-clock international border security patrol access needs, the tremendous seasonal presence of recreational vehicles, and low annual precipitation. Therefore vegetation impacts related to fence installation will be considered long-term to permanent. The primary pedestrian fence in Section B-5B will be designed to account for the unique conditions of the active dunes. Portions of the primary pedestrian fence constructed into the active dune field will require periodic maintenance to remove the sand deposited at the base of the fence to prevent its eventual burial, thus preventing vegetation re-establishment.

Effects on sparse Colorado Desert vegetation communities due to elimination of illegal human foot and vehicle traffic following construction of the primary pedestrian fence will be long-term, minor, and beneficial.

Construction, operation, and maintenance of tactical infrastructure will increase border security in the USBP El Centro Sector and may result in a change to illegal cross-border traffic patterns. However, changes to illegal cross-border traffic patterns result from a myriad of factors in addition to USBP operations and therefore are considered unpredictable and beyond the scope of this ESP.

7.2 WILDLIFE AND AQUATIC RESOURCES

7.2.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Migratory Bird Treaty Act (MBTA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the MBTA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for wildlife and aquatic resources.

Wildlife and aquatic resources include native or naturalized mammals, birds (including migratory birds), reptiles, amphibians, fish, mollusks, and crustaceans. Identification of the species potentially occurring in the project area was accomplished through literature reviews, coordination with appropriate Federal and state resource managers, other knowledgeable experts, and field surveys.

The MBTA (16 United States Code [U.S.C.] 703–712), as amended, implements various treaties for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful without a valid permit. Under Executive Order (EO) 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, the USFWS has the responsibility to administer, oversee, and enforce the conservation provisions of the MBTA, which include responsibility for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulations development and enforcement. The MBTA defines a migratory bird as any bird listed in 50 CFR 10.13, which includes nearly every native bird in North America.

This analysis is based on site surveys conducted in September, October, and November 2007. More detailed information on wildlife and aquatic resources, including species observed and the survey methodology is contained in the Biological Survey Report in **Appendix D**. CBP also worked closely with the USFWS to develop the Biological Resources Plan (see **Chapter 7.3** and **Appendix E**) and reduce adverse environmental impacts from the Project.

7.2.2 Affected Environment

The Imperial Desert occurs within the Colorado Desert Bioregion and supports more than 15 species of amphibians including the common bullfrog (*Rana catesbeiana*) and Couch's spadefoot toad (*Scaphiopus couchi*); more than 60 species of mammals including the big brown bat (*Eptesicus fuscus*), kit fox (*Vulpes macrotis*), roundtail ground squirrel (*Spermophilus tereticaudus*), and black-tailed jackrabbit (*Lepus californicus*); more than 430 species of birds including neotropical migratory birds, shorebirds, raptors, and waterfowl; and 70 species of reptiles including desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), western whiptail lizard (*Aspidoscelis tigris*), and

FTHL (*Phrynosoma (=Anota) mcallii*). The majority of the bird species are present in the spring and fall, when migrants on the Pacific Flyway pass through on their way to either summer breeding or wintering grounds, and during winter when summer residents from the north arrive to spend the winter.

The most common fish in the All-American Canal and associated laterals is the triploid grass carp, a sterile form of the nonnative grass carp (*Ctenopharyngodon idella*) from Asia. This sterile form is actively raised and introduced to the canal system by the Imperial Irrigation District to control hydrilla (*Hydrilla verticillata*), an invasive nonnative species of aquatic vascular plant.

Mammals and birds observed during the September, October, and November 2007 surveys included ground squirrel (*Spermophilus* sp.), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans),* desert cottontail (*Sylvilagus audubonii*), red-tailed hawk (*Buteo lineatus*), Gambel's quail (*Callipepla gambeli*), American coot (*Fulica Americana*), killdeer (*Charadrius vociferous*), greater road runner (*Geococcyx californianus*), Inca dove (*Columbina inca*), mourning dove (*Zenaida macroura*), common ground dove (*Columbina asserine*), rock dove (*Columba livia*), great tailed grackle (*Quiscalus mexicanus*), cliff swallow (*Hirundo pyrrhonota*), burrowing owl (*Athene cunicularia hypugaea),* and zebra-tailed lizard *(Callisaurus draconoides*). A complete list of wildlife observed is provided in the Biological Survey Report (see **Appendix D**).

7.2.3 Direct and Indirect Effects of the Project

Under the Project, existing border access roads will be widened from approximately 16 feet to approximately 20 feet resulting in the loss of approximately 5.3 acres of habitat. Additional loss of habitat resulting from clearing of lay-down areas for construction materials and maintenance and storage areas for heavy equipment will be minimal as previously disturbed areas will be selected for these functions to the extent practicable. Potential impacts on wildlife and aquatic life include habitat loss, habitat fragmentation, noise and physical disturbance associated with construction and subsequent maintenance activities, impacts of lights on nocturnal species, and beneficial impacts due to reduced cross-border violator traffic.

Impacts on wildlife from habitat loss will be short-term moderate and long-term minor adverse. Adverse impact from habitat fragmentation on small mammals would be minor due to the large amount of nearby available habitat. No impacts on aquatic species are anticipated from construction, assuming implementation of standard BMPs such as use of silt fencing and other mechanisms to control erosion and runoff. Impacts of construction and subsequent maintenance activities, including noise and physical disturbance, are anticipated to be short-term moderate and long-term minor adverse, respectively. These adverse impacts will be offset by the beneficial impact of reduced cross-border violator traffic through remaining habitat.

Lights along the fence corridor could behaviorally exclude nocturnal wildlife such as the kit fox from the illuminated zone, while potentially providing additional food sources for insectivorous bats such as the big brown bat. As such, lights will have minor to moderate, adverse and beneficial impacts on nocturnal wildlife depending on the species examined.

Impacts on migratory birds could occur, given the potential timing of fence construction. However, implementation of BMPs to avoid or minimize adverse impacts could markedly reduce their intensity. The following is a list of BMPs recommended for reduction or avoidance of impacts on migratory birds:

- Any groundbreaking construction activities should be performed before migratory birds return to the area (approximately 1 March) or after all young have fledged (approximately 31 July) to avoid incidental take.
- If construction is scheduled to start during the period in which migratory bird species are present, steps should be taken to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures, and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting on the site. Once a nest is established, they cannot be harassed until all young have fledged and left the nest site.
- If construction is scheduled to start during the period when migratory birds are present, a supplemental site-specific survey for nesting migratory birds should be performed immediately prior to site clearing.
- If nesting birds are found during the supplemental survey, construction should be deferred until the birds have left the nest. Confirmation that all young have fledged should be made by a competent biologist.

Assuming implementation of the above BMPs to the fullest extent feasible, impacts of the Project on migratory birds is anticipated to be short- and long-term, minor, and adverse due to construction disturbance and associated loss of habitat, and long-term, minor, and beneficial due to reduction of cross-border violator traffic through migratory bird habitat north of the impact corridor.

7.3 THREATENED AND ENDANGERED SPECIES

7.3.1 Definition of the Resource

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Endangered Species Act (ESA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the ESA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for threatened and endangered species.

Federal and state threatened and endangered species are addressed in this section of the ESP. In addition, one BLM sensitive species which is the subject of a multi-agency management strategy is also addressed as the Project location occurs within a designated management area.

The ESA, as amended (16 U.S.C. §§ 1531–1544 et seq.), provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species.

Under the ESA, a Federal endangered species is defined as any species which is in danger of extinction throughout all or a substantial portion of its range. The ESA defines a Federal threatened species as any species which is likely to become an endangered species within the foreseeable future throughout all or a substantial portion of its range.

The California Endangered Species Act (CESA) states that all native species of fish, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a substantial decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved.

7.3.2 Affected Environment

There are four state-listed taxa that have the potential to occur within or proximal to the fence corridors in Imperial County: two endangered plants, one endangered bird, and one threatened bird (see **Table 7-1**). Of those, three are also federally listed species: one threatened plant and two endangered birds. No state threatened or endangered species were observed during the September, October, or November 2007 surveys (see **Appendix D**). Subsequent surveys conducted in February 2008 recorded Peirson's milkvetch in areas east of the fence alignment; however, no individuals of this species were observed in the project corridor for the USBP El Centro Sector fence sections (see **Appendix D**).

The riparian vegetation occurring along the All-American Canal and smaller irrigation canals and ditches of the area does not appear to provide suitable habitat for the Yuma clapper rail. Most such areas contain dense stands of common reed extending into open water with little other emergent wetland vegetation or sandbars or other substrate features for foraging areas.

Trees associated with wet areas south of the All-American Canal, and which probably established and survive based on seepage water from that canal, are a mixture dominated by salt cedar. Density and distribution of these trees is not perceived to provide suitable habitat for the southwestern willow flycatcher.

Table 7-1. State and Federal Threatened and Endangered Species Near Project Area in Imperial County

Common Name	Scientific Name	Federal Status	State Status	General Habitat
PLANTS				
Algodones dunes sunflower	*Helianthus niveus* ssp. *Tephrodes*	--	E	Found in sandy desert area of Algodones Sand Dunes in CA and southwestern AZ.
Peirson's milk-vetch	*Astragalus magdalenae var. peirsonii*	T	E	Only known occurrence in the U.S. is in Algodones Sand Dunes. Found at elevations of 55–250 meters.
BIRDS				
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	Inhabits thickets, brushy areas, and riparian woodlands.
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T	Inhabits freshwater or brackish streamsides and marshlands. Forages in higher marsh vegetation, mudflat interface, and along tidal creeks.
REPTILES				
Flat-tailed horned lizard*	*Phrynosoma mcallii*	-- (Proposed)	SSC	Inhabits sandy flats or areas with a veneer of fine, windblown sand.
MAMMALS				
Peninsular bighorn sheep	*Ovis canadensis*	E	T	Restricted to east facing, lower elevation slopes, of the Peninsular ranges along the northwestern edge of the Sonoran Desert.

Notes:

T = threatened, E = endangered, SSC = Special Status Species

* Although not listed as threatened or endangered, the flat-tailed horned lizard is included here because it is a BLM-sensitive species for which a multi-agency management strategy has been developed and the USFWS is a signatory on that plan (BLM 2003b).

Potential habitat for the Algodones Dunes sunflower and Peirson's milkvetch occurs along the fence alignment in Section B-5B which enters into the west side of the Algodones Dunes. Potential habitat for Peninsular bighorn sheep in Section B-1 in the area between Interstate Highway 8 and the U.S./Mexico international border extending from the east facing slopes of the Jacumba

Mountains (adjacent to Section B-1) eastward approximately 0.6 miles (1 kilometer) from the toe of the slope. Further details on the natural history of these three species are provided in **Appendices D** and **E**. Two fence sections occur within designated management areas for the flat-tailed horned lizard (FTHL) (*Phrynosoma (=Anota) mcallii*). Sections B-1 and B-5A are within the Yuha Desert and East Mesa FTHL management areas, respectively. Additionally, a portion of Section B-1 and the construction access roads for Section B-1, Coyote Road 2 and Access Road #1, traverse Peninsular bighorn sheep critical habitat near the Jacumba mountains.

7.3.3 Direct and Indirect Effects of the Project

Under the Project, new boundary roads and construction access will occur and the existing international border access road segments will be widened from approximately 26 feet to approximately 30 feet resulting in the loss of approximately 5.3 acres of sparse creosotebush shrub communities corridor-wide; approximately 3.4 acres of desert wash vegetation in Pinto Wash of Section B-1; and approximately 8.3 acres of active sand dune communities adjacent to Sections B-4, B-5A, and B-5B. Additional loss of habitat resulting from clearing of lay-down areas for construction materials and maintenance and storage areas for heavy equipment will be minimal as previously disturbed areas will be selected for these functions to the extent practicable. Potential impacts on listed species include habitat loss, noise and physical disturbance associated with construction and subsequent maintenance activities, and beneficial impacts due to reduced cross-border violator traffic.

Algodones dune sunflower and Peirson's milkvetch. Section B-5B extends into potential habitat for Algodones dune sunflower and Peirson's milk vetch. Surveys of this section, conducted in September 2007, revealed no plants of these species. Subsequent surveys conducted in February 2008 also revealed no Peirson's milk vetch in the impact corridor of any USBP El Centro Sector fence sections (see **Appendices D** and **E**).

Flat-tailed horned lizard. The following conservation measures are identified in the FTHL Management Strategy (BLM 2003b) and will be implemented under the Project to the fullest extent applicable and practicable.

1. To the extent possible, surface-disturbing projects will be located outside of Management Areas (MAs) and the Research Area (RA), and will be timed to minimize mortality. If a project must be located within a MA or RA, effort will be made to locate the project in a previously disturbed area or in an area where habitat quality is poor. A survey of the project site will be conducted prior to construction in order to assist in locating the project.
2. Prior to project initiation, an individual will be designated as a field contact representative. The field contact representative will have the authority to ensure compliance with protective measures for the FTHL and will be the primary agency contact dealing with these measures. The field contact

representative will have the authority and responsibility to halt activities that are in violation of these terms and conditions.

3. All project work areas will be clearly flagged or similarly marked at the outer boundaries to define the limit of work activities. All construction and restoration workers will restrict their activities and vehicles to areas that have been flagged to eliminate adverse impacts on the FTHL and its habitat. All workers will be instructed that their activities are restricted to flagged and cleared areas.
4. Within FTHL habitat, the area of disturbance of vegetation and soils will be the minimum required for the project. If possible, specify a maximum disturbance allowable based on the specifics of the project. Clearing of vegetation and grading will be minimized. Wherever possible, rather than clearing vegetation and grading the ROW, equipment and vehicles will use existing surfaces or previously disturbed areas. Where grading is necessary, surface soils will be stockpiled and replaced following construction to facilitate habitat restoration. To the extent possible, disturbance of shrubs and surface soils due to stockpiling will be minimized.
5. Existing roads will be used for travel and equipment storage whenever possible.
6. Where feasible and desirable, in the judgment of the lead agency, newly created access routes will be restricted by constructing barricades, erecting fences with locked gates at road intersections, or by posting signs. In these cases, CBP will maintain, including monitoring, all control structures and facilities for the life of the project and until habitat restoration is completed.
7. A biological monitor will be present in each area of active surface disturbance throughout the work day from initial clearing through habitat restoration, except where the project is completely fenced and cleared of FTHLs by a biologist (see Measure 8). The biological monitors will meet the requirements set in Appendix 6 of the Management Strategy (BLM 2003b).

   The monitor(s) will perform the following functions:

   a. Develop and implement a worker education program. Wallet-cards summarizing this information will be provided to all construction and maintenance personnel.

      The education program will include the following aspects at a minimum:

      - Biology and status of the FTHL
      - Protection measures designed to reduce potential impacts on the species
      - Function of flagging designating authorized work areas

- Reporting procedures to be used if an FTHL is encountered in the field
- Importance of exercising care when commuting to and from the project area to reduce mortality of FTHLs on roads.

b. Ensure that all project-related activities comply with these measures. The biological monitor will have the authority and responsibility to halt construction activities that are in violation of these terms and conditions.

c. Examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85 degrees Fahrenheit (°F)) for the presence of FTHLs. In addition, all hazardous sites (e.g., open pipeline trenches, holes, or other deep excavations) will be inspected for the presence of FTHLs prior to backfilling.

d. Work with the project supervisor to take steps, as necessary, to avoid disturbance to FTHLs and their habitat. If avoiding disturbance to an FTHL is not possible or if an FTHL is found trapped in an excavation, the affected lizard will be captured by hand and relocated.

8. Sites of permanent or long-term (greater than one year) projects in MAs where continuing activities are planned and where FTHL mortality could occur can be enclosed with FTHL barrier fencing to prevent lizards from wandering onto the project site where they could be subject to collection, death, or injury. Barrier fencing should be in accordance with the standards outlined in Appendix 7 of the Management Strategy. After clearing the area of FTHLs (also see Appendix 7 [BLM 2003b]), no on-site monitor is needed (see Measure 7).

9. CBP will develop a project-specific habitat restoration plan in coordination with resource agencies. The plan will consider and include, as appropriate, the following methods: replacement of topsoil, seedbed preparation, fertilization, seeding of species native to the project area, noxious weed control, and additional erosion control. Generally, the restoration objective will be to return the disturbed area to a condition that will perpetuate previous land use. CBP will conduct periodic inspection of the restored area. Restoration will include eliminating any hazards to FTHLs created by construction, such as holes and trenches in which lizards might become entrapped. Disturbance of existing perennial shrubs during restoration will be minimized, even if such shrubs have been crushed by construction activities.

10. Construction of new paved roads will include a lizard barrier fence on each side of the road that is exposed to occupied FTHL habitat. Exceptions might occur in accordance with the following evaluation, to be applied separately to each side of the road. This prescription can also be applied to canals or other fragmenting projects.

If the side is made nonviable for FTHLs even if connected to the other side:

- Compensate for the entirety of the fragmented parcel.

If the side is viable only if connected to the other side:

- Compensate for the entirety of the fragmented parcel
- Provide fencing and effective culverts or underpasses that will maintain connectivity.

If the side is viable even if not connected to the other side:

- Provide fencing (no culverts).

Specifications for barrier fences are provided in Appendix 7 of the Management Strategy (BLM 2003b). Culvert design will be provided by the FTHL Interagency Coordinating Committee.

Assuming implementation of applicable and practicable BMPs, impacts of construction and subsequent maintenance activities on FTHL, including noise and physical disturbance, are anticipated to be short-term moderate and long-term minor adverse, respectively. These adverse impacts will be offset by the beneficial impact of reduced cross-border violator traffic through remaining habitat.

Peninsular Bighorn Sheep. The project will result in a temporary increase in traffic on the Section B-1 construction access roads, Coyote Road 2 and Access Road #1, which traverse Peninsular Bighorn Sheep Critical Habitat in the Jacumba Mountains. Specifically, these roads cross portions Pinto Wash, which is an important foraging habitat. Traffic makes bighorn sheep, especially ewes, hesitant to cross roads (Rubin *et al.* 1998, Epps *et al.* 2005). Therefore use of these access roads could result in a decrease in the availability of Pinto Wash as foraging habitat for Peninsular bighorn sheep.

Increased human disturbance could also result in physiological effects, such as elevated heart rate or the additional energy expended in moving away from perceived danger. Also, Project timing coincides with the reproductive period, which may result in increased impacts to ewes with lambs, which are typically are more sensitive to disturbance (Light and Weaver 1973, Wehausen 1980). While bighorn sheep have evolved to deal with occasional disruptions of their usual behavioral patterns, such as the presence of a predator, it appears that beyond a certain level of human activity, bighorns can simply be overwhelmed, and subsequently alter their behavior.

Since fence construction in section B-1 is anticipated to be completed by December 2008, the majority of the impacts associated with the use of Coyote 2 Road and Access Road #1 for construction access to section B-1 is anticipated to be temporary, occurring within the 9-month construction period (April to December 2008). Additionally, the implementation of general and species

specific BMPs (see **Appendix E**) would further reduce impacts on Peninsular bighorn sheep. These BMPs will require that any work that could disturb Peninsular bighorn sheep cease as soon as soon as individuals are observed within a mile of any construction activities or along associated access roads.

8. CULTURAL RESOURCES

8.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific obligation under the National Historic Preservation Act (NHPA), the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the NHPA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for cultural resources.

Cultural resources is an umbrella term for many heritage-related resources. The NHPA focuses on historic properties, specifically, prehistoric or historic districts, sites, buildings, or structures included in, or eligible for, the National Register of Historic Places (NRHP), including related artifacts, records, and material remains. Traditional, religious, and cultural properties holding significance for Native American tribes, and Native Alaskan and Native Hawaiian organizations can also be considered NRHP-eligible. Depending on the condition and historic use, such resources might provide insight into living conditions in previous civilizations or might retain cultural and religious significance to modern groups.

Other cultural resources laws and regulations include the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archeological Resources Protection Act (ARPA) (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

Typically, cultural resources are subdivided into archeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes. Archeological resources are locations containing evidence of human activity. In southern California, archeological resources dating to the prehistoric period (prior to European contact) typically consist of deposits of artifacts, such as flaked and ground stone tools; bone or shell ornaments or tools; dietary refuse such as bone, shells, or burned seeds; and occasionally features such as house floors, hearths, bedrock milling elements, or human remains. Archeological resources dating to the historic period might consist of structural remains such as foundations, cisterns, or privies; features such as roads, railroad grades, or water canals; or deposits of artifacts representing domestic, commercial, or other activities.

Architectural resources include standing structures such as buildings, dams, canals, bridges, transmission lines, and other structures of historic or aesthetic value. Although architectural resources generally must be more than 50 years

old to be considered for protection, exceptions can be made where the structures are likely to gain value in the future.

Resources of traditional, religious, or cultural significance to Native American tribes are those that relate to the traditional practices, beliefs, and religions of a living community, and are considered essential to maintaining the identity of that culture. Traditional cultural resources might include the locations of historical or mythological events, traditional hunting or gathering areas, sacred areas, or any other location of traditional cultural importance.

The Area of Potential Effect (APE) for cultural resources consists of the approximately 44.6-mile corridor of tactical infrastructure along the U.S./Mexico international border in the USBP El Centro Sector including access roads and construction staging areas. The project is entirely within California, near Calexico, in Imperial County. The tactical infrastructure will consist of primary pedestrian and vehicle fence, and supporting patrol roads and other tactical infrastructure. The APE for cultural resources concerns was determined to be a corridor with a width of 300 feet to the north of the U.S./Mexico international border, with the border as the southern limit. This corridor was determined based on the construction needs and description provided. The APE was defined to be sufficiently large to include all of the anticipated activities for access, construction and ongoing maintenance of the infrastructure.

8.2 AFFECTED ENVIRONMENT

The Project will occur in Imperial County, California, along the U.S./Mexico international border. The sections range from the western end of the Imperial Valley to the eastern edge, near the border with Arizona. A project-specific cultural resources survey was prepared in support of this project. The APE for the project includes lands owned or managed by the BLM, Bureau of Reclamation, USIBWC, and private property. The results of the archeological survey assessment are summarized below and included in a cultural resources report provided to the BLM and California SHPO.

An archeological site record and archival search was conducted at the Southeastern Information Center in El Centro, California. The archeological site record and archival search were completed to identify and collect data regarding cultural resources recorded within a 0.5-mile radius of the project APE. Archeological site records and archival information, including information regarding recorded sites (CA-SDI) and Primary Numbers (P-37) plotted on the Calexico, Bonds Corner, and Grays Well USGS Quadrangles was reviewed. The record search area included access roads and all areas known to be part of the project as of October 2007.

The record search results indicate that there are 106 sites in the general study area, 11 of which are plotted in or immediately adjacent to the APE (see **Table 8–1**). While this is a large number of sites, the recorded resources are generally

characterized as isolated prehistoric artifacts (prehistoric pottery sherds, flakes, flaked stone tools), features associated with the All-American Canal, historic trash dumps, or artifacts associated with the historic Plank Road. A total of 21 of the recorded resources are categorized as isolated finds, meaning there were fewer than three items found at the location. As the definition of a cultural resources site by the BLM is three or more artifacts in a 50-square-meter area,

Table 8-1. Recorded Sites within or Adjacent to the APE by Fence Section

Site Number CA-IMP-	Fence Section
(b)(3)	

many of these sites represent the minimal number of items needed to qualify as an archeological site and, in fact, under other site definitions will not have been recorded as sites.

None of the sites on **Table 8-1** have been evaluated for NRHP eligibility. In 2003 a survey by the BLM (Hangan 2003) was completed with the intent to relocate sites (b)(3); no evidence of the sites was found within a 50-m radius of where they are plotted on the site records. The status of the remaining sites is not known.

A search of the National Archeological Data Base (NADB) was completed in an effort to identify cultural resources management reports for previously completed cultural resources management activities (archeological survey and evaluation excavations) over a 0.5-mile radius around the APE. Information provided in the NADB indicates that a number of sections of the APE and vicinity have been previously surveyed and several of the previously recorded sites have been subjected to archeological evaluation. There have been 37 cultural resources studies conducted in the search area. These studies include large areas associated with transmission line projects, private developments, and projects associated with various border studies. The majority of the studies have been

negative for archeological resources, and have resulted in the recording of numerous resource isolates and fewer cultural resources sites.

An intensive pedestrian survey of the APE was conducted in October 2007 under BLM Cultural Resource Use Permit CA-08-03 and a Fieldwork Authorization Permit. The survey covered an area approximately 90 m (300 feet) in width along the designated corridor of access and construction. The survey corridor was intensively examined using pedestrian transects that did not exceed 10 m between team members. Areas of substantial disturbance or alteration were spot-checked for evidence of archeological materials. The ground surface visibility was excellent and survey conditions were optimal.

None of the 11 previously recorded sites (see **Table 8-1**) were relocated within the survey corridor. It is likely that none of these sites are in the precise locations that are plotted on the original site records. It is also possible that the alteration and dynamic conditions of the survey area could have buried or obscured these sites since their original recording, or that the original surveyors could have collected the materials visible on the surface, thereby leaving no discernable evidence of the site behind.

The pedestrian survey resulted in the recording of two previously unknown archeological resources (one historic artifact scatter and one prehistoric stone chipping station) and two prehistoric isolates (one prehistoric ceramic sherd and one piece of chipping waste/debitage). Site information regarding the resources was submitted to the Southeastern Information Center for assignment of permanent trinomials. All four resources are immediately adjacent to the APE. By definition, the two isolates are not eligible for NRHP consideration; evaluations were not conducted on the two newly discovered archeological sites, although both appear to have limited research potential.

Historic Architectural Resources. There are no buildings or other standing structures of historic or aesthetic value within or within the viewshed of the APE. The area surveyed is generally void of built features, though land alteration is common. Sections of the All-American Canal (feature determined to be NRHP-eligible) are adjacent to the APE, but outside of the project corridor.

Traditional Cultural Resources and Native American Issues. A letter initiating consultation was sent by the USACE-Fort Worth District to 14 tribal groups with cultural links to the project area. The concerns of these groups were considered during the preparation of this document and information regarding Traditional Cultural Properties has been considered as part of the impact analysis. There are no reported resources of traditional, religious, or cultural significance to Native American tribes recorded within or adjacent to the APE.

8.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

There are no archeological sites within the APE for the Project. Of the archeological resources adjacent to the APE, none have been assessed for NRHP eligibility or are determined to be eligible to the NRHP. The two newly discovered resources are adjacent to the APE and have not been evaluated for NRHP eligibility. No historic architectural resources or resources of traditional, religious, or cultural significance to Native American tribes are known to be within the APE.

Accordingly, the Project does not have the potential to directly impact archeological or architectural resources and no additional archeological survey work will be conducted. Due to the low potential for inadvertent discovery of previously unidentified, buried, or masked cultural resources within the project, archeological monitoring is not needed for project-related excavation or other ground-disturbing construction activities. Archeological resources in areas where there will be no primary pedestrian fence—west of fence section B-2 and east of B-5B—could be adversely impacted by increased cross-border activities into those areas where there will be no fence. The severity of the impact will vary depending on the extent of cross-border violator traffic that could reduce vegetation, disturb soils, and uncover and destroy currently unknown resources. A worker education program will be developed and a clear delimitation of work areas will occur to ensure that there will be no inadvertent damages to cultural resources outside but near the project areas.

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9. SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

9.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific legal obligations for the tactical infrastructure segments addressed in this ESP, the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines for evaluating environmental impacts on socioeconomic and environmental justice resources.

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Regional birth and death rates and immigration and emigration affect population levels. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

Data in three areas provide key insights into socioeconomic conditions that might be affected by a Project. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the “before” and “after” effects of any jobs created or lost as a result of a Project. Data on industrial or commercial growth or growth in other sectors provide baseline and trend line information about the economic health of a region.

Demographics identify the population levels and changes to population levels of a region. Demographics data might also be obtained to identify, as appropriate to evaluation of a Project, a region’s characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

Socioeconomic data shown in this chapter are presented at census tract, county, municipality, and state levels to characterize baseline socioeconomic conditions in the context of regional and state trends. Data have been collected from previously published documents issued by Federal, state, and local agencies; and from state and national databases (e.g., U.S. Bureau of Economic Analysis’ Regional Economic Information System).

Environmental Justice and Protection of Children. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* February 11, 1994, addresses the Federal policy of Federal

agencies' actions substantially affecting human health or the environment to not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The purpose of the EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a Project. Such information aids in evaluating whether a Project will render vulnerable any of the groups targeted for protection in the EO.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, addresses the Federal policy of protection of children from exposure to disproportionate environmental health and safety risks. This EO established that each agency has a responsibility to ensure that its policies, programs, activities, and standards address risk to children that results from environmental health risks or safety risks.

9.2 AFFECTED ENVIRONMENT

Socioeconomics. The Project includes the construction of primary pedestrian and vehicle fence along the U.S./Mexico international border southeast of Calexico, California, in Imperial County, California, and north and northeast of Mexicali, Mexico. The Project will occur in a rural/undeveloped area in the United States. For the purposes of this ESP, the Region of Influence (ROI) includes census tracts 119 and 124 in Imperial County, California, (adjacent to the location of the Project). Census tracts are designed to be relatively homogenous units with respect to population characteristics, economic status, and living conditions at the time of establishment. The most current census tract data is from Census 2000.

Employment types in the ROI vary (see **Table 9-1**). The largest employment type in the ROI, Imperial County, and California is educational, health, and social services (18.4, 22.0, and 18.5 percent, respectively). A substantially larger portion of residents in the ROI (18.4 percent) were employed in the finance, insurance, real estate, and rental and leasing industry as compared to Imperial County (3.7 percent) and California (6.9 percent). Other employment types in the ROI resemble the percentages of Imperial County and California (U.S. Census Bureau 2002). In 2006, Imperial County had a 15.3 percent unemployment rate compared to a 4.9 percent unemployment rate for California (Fedstats undated).

Residents, businesses, and industry in Mexicali, Baja California, Mexico, could also be affected by the Project. The population of Mexicali is approximately

1 million. Numerous international businesses occur in Mexicali, such as the diversified "maquiladora" industry (assembly plants) and other cultural facilities. Baja California has the 8th highest state-level per capita income in Mexico. Residents within Mexicali, Baja California, have the highest economic well-being in Baja California. Economic well-being is an indicator developed by Mexico's census bureau that uses a statistical technique called cluster analysis to compare and rank municipalities. This analysis ranks municipalities using a large number of social and demographic variables.

Table 9-1. Employment Type of Residents in ROI, Imperial County, and the State of California

Economic and Social Indicators	ROI	Imperial County	California
Employed Persons in Armed Forces	0.4	0.3	0.6
Employed Persons in Civilian Labor Force (By Industry)			
Agriculture, forestry, fishing and hunting, and mining	15.8	11.7	1.9
Construction	2.2	5.3	6.2
Manufacturing	7.8	4.8	13.1
Wholesale trade	5.4	5.4	4.1
Retail trade	18.2	12.3	11.2
Transportation and warehousing, and utilities	4.5	6.4	4.7
Information	6.9	1.3	3.9
Finance, insurance, real estate, and rental and leasing	18.4	3.7	6.9
Professional, scientific, management, administrative, and waste management services	5.2	5.3	11.6
Educational, health and social services	18.4	22.0	18.5
Arts, entertainment, recreation, accommodation and food services	5.3	6.3	8.2
Other services (except public administration)	3.6	4.4	5.2
Public administration	7.5	11.0	4.5

Source: U.S. Census Bureau 2002

Note: Census 2000 data are the most recent comprehensive employment data for the ROI.

Environmental Justice. For the purposes of the environmental justice analysis for this ESP, the residents of the ROI and Mexicali, Mexico, were evaluated. The ROI is considered to have a disproportionately high percentage of low-income or minority residents under either of two conditions: (1) the percentage of low-income or minority populations within the ROI is greater than Imperial County's minority percentage, or low-income percentage, or (2) the percentage of persons in low-income or minority populations within the ROI is greater than 50 percent. Based on these two conditions, the ROI is not considered to have a disproportionately high percentage of low-income or minority residents according to Census 2000 data.

Table 9-2 shows demographic data and economic indicators of the ROI, Imperial County, and California. The ROI has a lower percentage of minority populations than Imperial County. Approximately 35.7 percent of the population in the ROI and 39.1 percent of the population in California are reported as "Some other race," as compared to 16.8 percent in Imperial County (see **Table 9-2**). The economic characteristics of the ROI are similar to those of Imperial County.

Table 9-2. Demographic and Economic Characteristics of the ROI, Imperial County, and the State of California

	ROI	Imperial County	California
Total Population	5,585	142,361	33,871,648
Percent White	57.8	49.4	59.5
Percent Black or African American	2.1	4.0	6.7
Percent American Indian Alaska Native	0.6	1.9	1.0
Percent Asian	0.4	2.0	10.9
Percent Native Hawaiian and Other Pacific Islander	0.1	0.1	0.3
Percent "Some other race"	35.7	39.1	16.8
Percent Reporting 2 or more races	3.2	3.6	4.7
Hispanic or Latino (of any race)	71.2	72.2	32.4
Percent Below Poverty	18.1	22.6	14.2
Per Capita Income	$13,224	$13,239	$22,711
Median Household Income	$31,744	$35,226	$53,025

Source: U.S. Census Bureau 2002

Note: Census 2000 data are the most recent comprehensive economic and demographic data for the ROI.

However, the economic characteristics of both the ROI and Imperial County are slightly lower than California (see **Table 9-2**). Residents living in the ROI and Imperial County have lower median household incomes and per capita incomes than the State of California (see **Table 9-2**) (Fedstats undated). In the ROI and Imperial County, 18.1 percent and 22.6 percent of the residents are living below the poverty level, respectively, as compared to 14.2 percent in the State of California (see **Table 9-2**). Residents, businesses, and industry in Mexicali occur as close as 50 feet from the project corridor.

9.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Construction expenditure impacts are assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a Project. For example, implementation of an action that

creates 10 employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. If potential socioeconomic changes were to result in substantial shifts in population trends or a decrease in regional spending or earning patterns, they will be considered adverse. Analysis of Project impacts focused on the potential to:

- Change the local business volume, employment, personal income, or population that exceeds the ROI's historical annual change
- Adversely affect social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates.

Socioeconomics. Short-term minor direct beneficial effects will be expected as a result of construction associated with the Project. The construction activities will occur over calendar year (CY) 2008. It is assumed that local materials, supplies, and contractors will be used. However, the limited nature of the construction and new employment associated with the Project will not substantially affect on personal income, poverty levels, or other demographic employment indicators in the ROI.

Environmental Justice. Environmental justice concerns and special risks to the populations in Mexicali, Mexico, living closest to the construction (as close as 50 feet) include safety, noise, pollutants, and hazardous materials. Additional risks to children could occur. Children have physiological and behavioral characteristics that make them more vulnerable than adults to damage from environmental effects. Safety precautions to protect children and other populations in areas surrounding work sites will include adequate measures to restrict access, minimization of hazards associated with construction activities, and proper handling and disposal of hazardous materials (see **Chapter 10**). These BMPs will reduce the potential for impacts on any populations or age groups, including children. Noise associated with construction will be intermittent and short in duration (described in **Chapter 3**).

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10. HAZARDOUS MATERIALS AND WASTES

10.1 DEFINITION OF THE RESOURCE

Although the Secretary's waiver means that CBP no longer has any specific obligation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), and the Superfund Amendments and Reauthorization Act (SARA) the Secretary committed CBP to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with CERCLA, RCRA, TSCA, and SARA as the basis for evaluating potential environmental impacts and developing appropriate mitigations for hazardous materials and wastes.

Solid Wastes. Solid waste management primarily relates to the availability of landfills to support a population's residential, commercial, and industrial needs. Alternative means of waste disposal might involve waste-to-energy programs or incineration. In some localities, landfills are designed specifically for, and limited to, disposal of construction and demolition debris. Recycling programs for various waste categories (e.g., glass, metals, papers, asphalt, and concrete) reduce reliance on landfills for disposal.

Hazardous Wastes. Hazardous materials are defined by 49 CFR 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR.

Hazardous substances are defined by CERCLA at 42 U.S.C. §9601(14), as amended by SARA and TSCA. The definition of hazardous substance includes (1) any substance designated pursuant to 33 U.S.C. §1321 (b)(2)(A); (2) any element, compound, mixture, solution, or substance designated pursuant to 42 U.S.C. §9602; (3) any hazardous waste; (4) any toxic pollutant listed under 33 U.S.C. §1317(a); (5) any hazardous air pollutant listed under Section 112 of the CAA (42 U.S.C. §7412); and (6) any imminently hazardous chemical substance or mixture with respect to which the Administrator of USEPA has taken action pursuant to 15 U.S.C. §2606. The term hazardous substance does not include petroleum products and natural gas.

Hazardous wastes are defined by RCRA at 42 U.S.C. §6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or substantially contribute

to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps.

Toxic substances are regulated under TSCA (15 U.S.C. §2601 et seq.), which was enacted by Congress to give USEPA the ability to track the approximately 75,000 industrial chemicals currently produced or imported into the United States. USEPA screens these chemicals and can require reporting or testing of those that might pose an environmental or human-health hazard. USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk. Asbestos and polychlorinated biphenyls (PCBs) are among the chemicals regulated by TSCA.

In general, hazardous materials, hazardous substances, and hazardous wastes include elements, compounds, mixtures, solutions, and substances which, when released into the environment or otherwise improperly managed, could present substantial danger to the public health, welfare, or the environment.

Evaluation of hazardous materials and wastes focuses on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, handling, and use of pesticides, herbicides, fuels, solvents, and petroleum, oil, and lubricants (POL). Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on the type of soil, topography, and water resources.

10.2 AFFECTED ENVIRONMENT

Solid Wastes. The California Integrated Waste Management Board (CIWMB) is responsible for regulating solid waste in California. The CIWMB promotes waste reduction and management of materials for the highest and best use (CIWMB 2007a). Solid wastes in Imperial County, California, are managed by the Imperial County Department of Public Works, Solid Waste/Recycling Division. The Department administers and operates ten landfills in compliance with all applicable Federal, state, and local regulations. Each landfill has a separate permit which is subject to review every 5 years. Recently these permits have

required revisions because of increased development in outlying, rural areas which increases the amount of daily tonnage and increased daily vehicle count (ICDPW undated). The total household solid waste disposal rate in Imperial County, California, is 4,588 tons per year. The total business solid waste disposal rate in Imperial County, California, is 148,357 tons per year (CIWMB 2007b).

Hazardous Wastes. The Cal/EPA, California Department of Toxic Substance Control (DTSC) regulates the treatment, storage, transport, and disposal of hazardous waste. DTSC also administers some site clean-up programs. DTSC is authorized by the USEPA to regulate and enforce the provisions of RCRA. There are no known hazardous waste clean-up sites within the construction corridor (CDTSC undated). Environmental Due Diligence Assessments are also being prepared to identify the presence of hazardous materials and wastes within the project corridor.

10.3 DIRECT AND INDIRECT EFFECTS OF THE PROJECT

Solid Waste. Short-term minor adverse effects on solid waste management in Imperial County, California, will be expected as a result of the Project. Solid waste generated from the construction activities will consist of building materials such as concrete and metals (conduit and piping). The contractor will recycle construction materials to the greatest extent possible. Solid waste generated as a result of the Project is expected to be minor compared to the solid waste currently generated in Imperial County. The contractor will dispose of nonrecyclable construction debris at one or more of the permitted Imperial County landfills, which have not yet been identified. The construction debris associated with the Project will not result in exceeding the capacity of any landfill or the violation of any permit for any landfill.

Hazardous Wastes. Long-term minor adverse effects will be expected as a result of the Project. Products containing hazardous materials (such as fuels, oils, lubricants, pesticides, and herbicides) will be procured and used during construction. It is anticipated that the quantity of products containing hazardous materials used will be minimal and their use will be of short duration. It is anticipated that the quantity of hazardous and petroleum wastes generated from construction will be negligible. Accidental spills could occur as a result of the construction. A spill could potentially result in adverse effects on wildlife, soils, water, and vegetation. However, the amount of hazardous materials at the construction site will be limited and the equipment necessary to quickly contain any spill will be present when refueling. Contractors will be responsible for the management of hazardous materials and wastes.

There are no known USTs, ASTs, or hazardous waste clean-up sites within the project corridor.

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11. RELATED PROJECTS AND POTENTIAL EFFECTS

The following analysis summarizes expected environmental effects from the Project when added to other past, current, and reasonably foreseeable future actions. The geographic scope of the analysis varies by resource area. For example, the geographic scope of cumulative impacts on resources such as noise, visual resources, soils, and vegetation is very narrow and focused on the location of the resource. The geographic scope of air quality, wildlife and sensitive species, and socioeconomics is much broader and considers more county- or regionwide activities. Projects that were considered for this analysis were identified by reviewing USBP documents, news releases, and published media reports, and through consultation with planning and engineering departments of local governments, and state and Federal agencies. Projects that do not occur in close proximity (i.e., within several miles) of the fence will not contribute to a cumulative impact and are generally not evaluated further.

11.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

Cumulative Fencing, Southern Border. There are currently 62 miles of landing mat fence at various locations along the U.S./Mexico international border (CRS 2006); 14 miles of single, double, and triple fence in San Diego, California; 70 miles of new primary pedestrian fence approved and currently under construction at various locations along the U.S./Mexico international border; and fences at POE facilities throughout the southern border. In addition, 225 miles of fence will be built (including the 44.6 miles in the USBP El Centro Sector) in Texas, New Mexico, Arizona, and California.

***Past Actions*.** Past actions are those within the cumulative effects analysis areas that have occurred prior to the development of this ESP. The effects of these past actions are generally described under each resource area. For example, extensive off-highway vehicle use in the Algodones Dunes has contributed to the existing environmental conditions of the area.

***Present Actions*.** Present actions include current or funded construction projects, USBP or other agency operations in close proximity to the fence locations, and current resource management programs and land use activities within the cumulative effects analysis areas. Ongoing actions considered in the cumulative effects analysis include the following:

- New Fence. In January 2004, USBP approved construction of approximately 5 miles of primary pedestrian fence along the U.S./Mexico international border starting approximately 2 miles west of the Calexico POE (designated as Section B-3 in this ESP). This fence is currently under construction. In August 2007, USBP approved the installation of 7.62 miles of maintenance road and 2.62 miles of additional primary pedestrian fence to extend the 5 miles of primary pedestrian fence

previously approved. Section B-2 will be west of and connected to the 2.62 miles of primary pedestrian fence approved in August 2007 (CBP 2007).

- Construction of Primary Fence. The FY 2007 DHS Appropriations Act provided $1.2 billion for the installation of fencing, infrastructure, and technology along the border (CRS 2006). CBP will construct 225 miles of primary fence in Rio Grande Valley, Marfa, Del Rio, and El Paso, Texas; Tucson and Yuma, Arizona; El Centro and San Diego, California, Sectors. Section B-5B will be approximately 11 miles from an adjoining fence in the Yuma, Arizona, Sector.
- New River Safety Barrier. USBP approved construction of a retractable safety barrier/gate-style fence on the New River near the City of Calexico (CBP 2005). This project also proposed installation of approximately 2 miles of permanent lighting near the City of Calexico.
- All-American Canal Relining Project (AACRP). In 1994, the Bureau of Reclamation approved the AACRP and it is currently under construction near Section B-5B. This project consists of constructing a 23-mile concrete-lined canal parallel to the existing earthen canal, from 1 mile west of Pilot Knob to Drop 3. Construction is expected to continue through Spring 2010 (USBR 1994).

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their effects. The following activities are reasonably foreseeable future actions:

- SBI*net*. A comprehensive program focused on transforming border control through technology and infrastructure. The goal of the program is to field the most effective proven technology, infrastructure, staffing, and response platforms, and integrate them into a single comprehensive border security suite for DHS. Potential future SBI*net* projects include deployment of sensor technology, communications equipment, command and control equipment, fencing, barriers capable of stopping a vehicle, and any required road or components such as lighting and all-weather access roads (Boeing 2007). Over the next year, 225 miles of primary fence will be built (including the 25.2 miles in this ESP). The first phase of construction will occur in areas that have already been developed (e.g., currently contains permanent vehicle barriers or temporary vehicle barriers) and, thus, little or no additional environmental impacts will be expected. The second phase of construction will generally occur in more remote areas.
- Additional Tactical Infrastructure within the USBP El Centro Sector. USBP has identified additional tactical infrastructure that might be required in the future, including secondary pedestrian fences and all-weather patrol roads in urban areas near POEs. While specific future operational requirements

are not currently known, have not been funded, and are not reasonably certain to occur, additional tactical infrastructure can be identified for the purposes of the cumulative effects analysis. Based on operational requirements in urban areas in other sectors, the USBP El Centro Sector can reasonably foresee the need for approximately 5.9 miles of secondary (double) fencing and an all-weather road in the urban area of Calexico, California; approximately 2.4 miles of secondary fencing and an all-weather road along Section B-2; approximately 7.4 miles of secondary fencing and an all-weather road along Section B-3; and approximately 8.6 miles of secondary fencing along Section B-4. Lighting and sensors might be needed in the distant future in Sections B-2, B-3, and B-4. The USBP El Centro Sector has also projected the need for a vehicle bridge with a gate spanning the New River, fencing, an all-weather road, and lighting along both sides of the river.

- BLM Eastern San Diego Draft Resource Management Plan. BLM has prepared a Draft Resource Management Plan and Environmental Impact Statement (EIS) which will provide future management guidance for use and protection of the resources on approximately 100,000 acres of public lands managed by BLM's El Centro Field Office in the eastern portion of San Diego County, California (BLM 2007b).
- City of Calexico. The City of Calexico is proposing to annex a 640-acre parcel of land near the All-American Canal. The proposed annex is along the eastern edge of the City of Calexico and will be developed as a housing, commercial, and industrial area (CBP 2005).
- San Diego Gas & Electric (SDG&E) transmission line. SDG&E has proposed to construct a new 150-mile transmission line between the cities of El Centro and San Diego. The stated purpose of the project is to bring renewable energy sources into San Diego from Imperial County, reduce energy costs, and improve electric reliability in the San Diego area. SDG&E has filed an application with the California Public Utilities Commission to construct the Sunrise Powerlink Project. A joint EIS/Environmental Impact Report is being prepared (BLM 2007c).
- California Department of Transportation (Caltrans). Caltrans has several road improvement projects scheduled for Imperial County in the next 5 years. However, the potential for adverse cumulative impacts would be low as the majority of the construction would be within existing ROW. The following projects are in the planning stage and potential impacts are unknown at this time: new Interstate 8 and Imperial Avenue interchange, construction of 5.5 miles of four-lane divided highway with access control from State Highway 98 to Interstate 8, upgrade existing State Route (SR) 111 between Ross Road and SR 78 in Imperial County, and widen or realign SR 98 between SR 111 and SR 7 from four to six lanes (CBP 2007).

- Lower Colorado River Drop 2 Storage Reservoir. This project is approximately 30 miles east of the City of El Centro, and might be near Sections B-5A and B-5B. The plans call for a 450-acre reservoir on a 615-acre site. Administrative and office buildings as well as mechanical equipment necessary for operations of the reservoir would be on the 615-acre site. In addition to the reservoir, this project also includes 6.5 miles of new canal to connect the Coachella Valley Canal to the reservoir and from the reservoir to the All-American Canal. The total acreage expected to be impacted from this proposed project is 967 acres (CBP 2007).

Table 11-1 presents the cumulative effects that might occur from implementation of the Project.

11.2 AIR QUALITY

Minor short-term adverse cumulative effects on air quality are expected from the construction of tactical infrastructure in combination with other reasonably foreseeable future actions. Emissions from construction, operation, and maintenance activities will not be expected to affect local or regional air quality.

11.3 NOISE

Negligible cumulative effects on ambient noise will be expected as a result of construction, operation, and maintenance activities associated with the Project. There are no other known activities in the vicinity of the Project that are expected to contribute noticeably to the overall noise environment.

11.4 LAND USE AND VISUAL RESOURCES

Construction of tactical infrastructure would result in minor changes to land use. Recent activities that have most affected land use near the tactical infrastructure is the AACRP, construction of new energy and communications infrastructure, and construction of other USBP tactical infrastructure. Moderate cumulative impacts on land use are expected from the additive effects of the past, present, and reasonably foreseeable future actions.

Minor to moderate impacts on visual resources are expected from the additive effects of past, present, and reasonably foreseeable future actions. The presence of construction equipment under the Project will produce a short-term adverse impact on visual resources. Once installed, the tactical infrastructure will create a permanent and fixed visual interruption at fixed points. Adverse cumulative effects could include temporary construction impacts and the introduction of light poles and increased night illumination during construction. Recreational activities such as star-gazing will be adversely affected by this cumulative impact in night illumination.

Table 11-1. Summary of Potential Cumulative Effects

Resource	Past Actions	Current Background Activities	Project	Known Future Actions	Cumulative Effects
Air Quality	State nonattainment for 8-hour O_3; Federal moderate maintenance for CO; State nonattainment for PM_{10} and $PM_{2.5}$.	Existing emissions sources continue to adversely affect regional air quality.	Construction activities will temporarily contribute to CO and PM emissions.	Existing emissions sources continue to adversely affect regional air quality. No new major sources identified in El Centro.	Construction activities will temporarily contribute to CO and PM emissions.
Noise	Commercial and residential development, vehicles dominate ambient noise near urban areas. Remote areas temporarily impacted by ORV recreational activities.	Commercial and residential development, vehicles dominate ambient noise near urban areas. Remote areas temporarily impacted by ORV recreational activities.	Short-term noise impacts from construction.	None.	Current activities will be the dominant noise source. Negligible cumulative impacts.

Resource	Past Actions	Current Background Activities	Project	Known Future Actions	Cumulative Effects
Land Use and Visual Resources	Commercial and residential development, infrastructure improvements on natural areas. Historical development of undeveloped lands.	Commercial and residential development near Calexico and infrastructure improvements. BLM Eastern San Diego Draft Resource Management Plan (RMP) identifies management direction for lands. Development of natural areas for community and industry infrastructure.	CBP purchase of land or easements to construct tactical infrastructure. Natural areas developed for tactical infrastructure. Constant static visual interruption at fixed points. Loss of recreational area.	Commercial and residential development and infrastructure improvements permanently alter natural areas and agricultural lands. Continued moderate to severe impacts on Class I and Class III Visual Resources.	Moderate adverse impacts on natural areas. Minor to moderate long-term impacts to visual resources from permanent infrastructure.
Geology and Soils	Installation of infrastructure, intrusions by cross-border violators have modified soils.	Installation of infrastructure; continued cross-border violators activities adversely affect soils.	Minor grading and recontouring will disturb soils.	Continued cross-border violator activities adversely affect soils. Installation of infrastructure.	Minor long-term impact from construction of additional infrastructure.
Water Use and Quality (Hydrology and Groundwater)	High dissolved solids concentrations, fluoride, and boron in two major aquifers.	Groundwater primarily used for industrial applications.	Short-term minor adverse effects from groundwater use for dust suppression during construction.	Long-term adverse effects on groundwater recharge from reservoir and canal relining projects.	Minor short-term impact from groundwater use during construction.

Resource	Past Actions	Current Background Activities	Project	Known Future Actions	Cumulative Effects
Water Use and Quality (Surface Waters and Waters of the United States)	Degradation of water resources due to pollution.	Surface water quality adversely impacted by development.	Soil disturbance, erosion during construction, impacts on wetlands.	Construction erosion and sediment runoff, potential oil spills and leaks.	Nonpoint discharges, construction erosion and sediment runoff, potential oil spills and leaks.
Water Use and Quality (Floodplains)	Floodplain adversely impacted by development, decreased vegetation, increased impervious surfaces, and soil compaction.	Various storm water and floodplain management practices when activities are in or near floodplains.	Short-term potential for minor impacts during construction. Only a small portion of Section B-4 is within 100-year floodplain.	Increased development activities and water reservoir and canal projects could change peak flow or floodplain capacity during high-volume storm events.	Project will not be expected to contribute to flood hazards.
Biological Resources (Vegetation Resources)	Degraded historic habitat of sensitive and common wildlife species.	Continued urbanization results in loss of native species.	Habitat fragmentation. Minor to moderate loss of native species and habitat.	Minor to moderate loss of native species and habitat.	Moderate adverse impacts on native habitats and vegetation.
Biological Resources (Wildlife and Aquatic Resources)	Loss of native habitat due to development; loss of wildlife corridors; impacted habitat and food sources.	Development continues to impact biological resources and wildlife habitat.	Minor to moderate loss of habitat, wildlife corridors, habitat fragmentation.	Minor to moderate loss of habitat and wildlife corridors.	Minor to moderate loss of habitat and wildlife corridors.
Biological Resources (Threatened and Endangered Species)	Degraded habitat impacted sensitive species.	Urbanization and agricultural development degraded habitat for sensitive species.	Minor to moderate loss of habitat, habitat fragmentation.	Loss of habitat for sensitive species.	Minor to moderate loss of habitat, habitat fragmentation.

Resource	Past Actions	Current Background Activities	Project	Known Future Actions	Cumulative Effects
Cultural Resources	Development and infrastructure improvements adversely affected cultural resources.	Development and infrastructure improvements adversely affect cultural resources; some preservation.	None.	Continued development and infrastructure improvements to adversely affect cultural resources; continued preservation efforts.	None.
Socioeconomics, Environmental Justice, and Protection of Children	Commercial and residential development around Calexico.	Commercial and residential development around Calexico.	Minor, temporary contribution to local construction industry.	Infrastructure development to support future commercial and residential development around Calexico.	Minor stimulation of local economies from construction activities. No adverse effects on environmental justice issues, children, or human health and safety.
Hazardous Materials and Wastes	Use of hazardous substances in vehicles. Possible illegal dumping.	Use of hazardous substances in vehicles. Possible illegal dumping.	Minor use of hazardous materials during construction.	Minor use of hazardous materials during construction.	None.

11.5 GEOLOGY AND SOILS

Additive effects include a minor increase in erosion. Construction of the tactical infrastructure adjacent to the AACRP would have a minor cumulative effect on soils due to construction.

11.6 WATER USE AND QUALITY

11.6.1 Hydrology and Groundwater

Minor adverse cumulative effects could occur on groundwater resources if groundwater was to be used for dust suppression during Project construction. The AACRP is designed to reduce canal seepage to the groundwater table in the Mexicali Valley by up to 68,000 acre-feet annually, potentially reducing the volume, duration, and quality of irrigation return water into the Alamo River. Due to the short-term nature of Project construction potential adverse cumulative effects when combined with the AACRP would be minor.

11.6.2 Surface Water and Waters of the United States

Minor impacts on surface water and waters of the United States could occur from the Project and reasonably foreseeable future actions. As discussed in **Chapter 6.2.3**, wetland delineations were completed in January 2008 and provided to the USACE-Los Angeles District which identified 8.48 acres of jurisdictional wetland impacts. Long-term adverse cumulative impacts on vegetated wetlands occurring in association with the All-American Canal would be expected as a result of the AACRP. Relining or realignment of the canal would be expected to directly impact wetlands occurring in and on the banks of the canal as a result of diversion of flows and direct removal of vegetation associated with channel lining. Cumulative impacts on wetlands in proximity to the canal could occur following completion of the AACRP if the adjacent wetlands were receiving hydrologic input from seepage of the canal prior to its lining. The cumulative impacts on wetlands will be long-term adverse and moderate.

Potential cumulative adverse effects on Alamo River surface water flow volume, duration, and water quality could result from the AACRP to the east that will reduce canal seepage to the groundwater table in the Mexicali Valley by up to 68,000 acre-feet annually, potentially reducing the volume, duration, and quality of irrigation return water into the Alamo River.

11.6.3 Floodplains

Minor adverse effects from construction adjacent to the 100-year floodplain and from a small portion of Segment B-4 within the 100-year floodplain could occur. Continued development, AACRP, and proposed Lower Colorado River Storage Reservoir could affect flood dynamics, though it is assumed that floodplain management will be incorporated as appropriate into all development projects to

reduce the potential for adverse effects on the 100-year floodplain. Implementation of the Project will have a negligible long-term effect on floodplain resources.

11.7 BIOLOGICAL RESOURCES

11.7.1 Vegetation Resources

Minor impacts on native species vegetation and habitat are expected from the additive effects of past, present, and reasonably foreseeable future actions. As discussed in **Chapter 7.1**, vegetation in the project corridor has been highly disturbed by previous construction activities for the All-American Canal, utility infrastructure, recreational ORV uses, and USBP patrol roads. In addition, vegetation in these areas has been impacted over time by illegal cross-border traffic.

Long-term adverse cumulative impacts on vegetation associated with wetlands in proximity to the All-American Canal will be expected as a result of the AACRP. Relining or realignment of the canal will be expected to directly impact vegetation occurring in and on the banks of the canal as a result of diversion of flows and direct removal of vegetation associated with channel lining. Cumulative impacts on wetland vegetation in proximity to the canal could occur following completion of the AACRP if the adjacent wetlands were receiving hydrologic input from seepage of the canal prior to its lining. The cumulative impacts on wetlands will be long-term and adverse.

11.7.2 Wildlife and Aquatic Resources

Minor impacts on wildlife and species are expected from the additive effects of the past, present, and reasonably foreseeable future actions. Cumulative impacts will mainly result from loss of habitat, habitat disturbance and degradation, construction traffic, and the AACRP reducing groundwater discharge to wetlands habitat. Displaced wildlife will move to adjacent habitat if sufficient habitat exists. Wildlife could also be adversely impacted by noise during construction, operational lighting, and loss of potential prey species under the Project. Species will also be impacted by equipment spills and leaks. The permanent lighting could have minor, adverse cumulative impacts on migration, dispersal, and foraging activities of nocturnal species.

11.7.3 Threatened and Endangered Species

As discussed in **Chapter 7**, CBP has begun Section 7 preconsultation coordination with the USFWS regarding potential impacts on listed species or designated critical habitat. Minor adverse impacts are possible on the Algodones dunes sunflower, Peirson's milkvetch, and FTHL due to loss of habitat. Special status species are commonly protected because their historic range and habitat has been reduced and will only support a small number of individuals.

Construction, operation, and maintenance of tactical infrastructure, when combined with past, present, and future residential and commercial development, has the potential to result in minor to major adverse cumulative impacts on these species.

11.8 CULTURAL RESOURCES

Because there are no known cultural resources within the Project area, there are no expected impacts on cultural resources and therefore will not contribute to cumulative impacts. Recorded cultural resources are outside the immediate Project and will not be directly or indirectly impacted. A cultural resources technical report has been provided to BLM and the California SHPO.

11.9 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

Minor, short-term beneficial impacts on local and regional socioeconomic resources are expected from the additive effects of past, present, and reasonably foreseeable future actions. Economic benefits will be realized by construction companies, their employers and suppliers, and by Imperial County through a minor increase in tax receipts for the purchase of goods and services. Construction of tactical infrastructure has the potential for minor beneficial effects from temporary increases in construction jobs and the purchase of goods and services. Since the construction jobs will be temporary, negligible cumulative effects on population growth, income, or other services will be expected.

The cumulative impacts of USBP activities to control the border of the United States and the concomitant effects upon the Nation's health and economy, violent and drug-related crimes, community cohesion, property values, and traditional family values will be long-term and beneficial, both nationally and locally. Residents of adjacent towns will benefit from increased security, a reduction in illegal drug-smuggling activities and the number of violent crimes, less damage to and loss of personal property, and less financial burden for entitlement programs. This will be accompanied by the concomitant benefits of reduced enforcement and insurance costs. Operation and maintenance of the tactical infrastructure has little potential for cumulative impacts on socioeconomics.

11.10 HAZARDOUS WASTES AND HAZARDOUS MATERIALS

Construction, operation, and maintenance of tactical infrastructure will require minimal quantities of hazardous materials and generate small quantities of hazardous wastes. Therefore, minimal cumulative impacts on hazardous materials and wastes will occur as a result of the Project.

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13. ABBREVIATIONS AND ACRONYMS

$\mu g/m^3$	micrograms per cubic meter
°C	degrees Celsius
°F	degrees Fahrenheit
AACRP	All-American Canal Relining Project
APE	area of potential effect
AQCR	air quality control region
ARPA	Archeological Resources Protection Act
AST	aboveground storage tank
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBP	U.S. Customs and Border Protection
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CIWMB	California Integrated Waste Management Board
cm	Centimeter
CM&R	Construction, Mitigation, and Restoration
CO	carbon monoxide
CO_2	carbon dioxide
CRS	Congressional Research Service
CWA	Clean Water Act
CY	calendar year
dBA	A-weighted decibels
DDE	dichlorodiphenyl-dichloroethylene
DDT	dichlorodiphenyltrichloroethane
DHS	U.S. Department of Homeland Security
DTSC	Department of Toxic Substance Control
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
FR	Federal Register
ft^3/s	cubic feet per second
FTHL	flat-tailed horned lizard
FY	fiscal year
IBWC	International Boundary and Water Commission
ICAPCD	Imperial County Air Pollution Control District
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended
MA	Management Areas
MBTA	Migratory Bird Treaty Act
m	meter

mg/m^3	milligrams per cubic meter
MMTCE	million metric tons of carbon equivalent
MSL	mean sea level
NA	No Agreement or Not Applicable
NAAQS	National Ambient Air Quality Standards
NADB	National Archeological Data Base
NAGPRA	Native American Graves Protection and Repatriation Act
ng/g	nanograms per gram
ng/L	nanograms per Liter
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NI	no indicator
NO	No Occurrence or nitrogen oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NRCS	Natural Resources Conservation Service
O_3	ozone
OBL	obligate wetland
OHM	ordinary high water mark
ORV	off-road vehicle
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
Pb	lead
PCB	polychlorinated biphenyl
PM_{10}	particles equal to or less than 10 microns in diameter
$PM_{2.5}$	particles equal to or less than 2.5 microns in diameter
POE	Port of Entry
POL	petroleum, oil, and lubricants
ppm	parts per million
RA	Research Area
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
ROI	Region of Influence
ROW	right-of-way
SAAQS	State Ambient Air Quality Standards
SARA	Superfund Amendments and Reauthorization Act
SBI	Secure Border Initiative
SDAQCR	Southeast Desert Air Quality Control Region
SDG&E	San Diego Gas & Electric
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasure
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TSCA	Toxic Substances Control Act
U.S.C.	United States Code
UPL	Obligate Upland
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USEPA	U.S. Environmental Protection Agency
USIBWC	U.S. Section of the International Boundary and Water Commission
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VOC	volatile organic compound
VRM	Visual Resource Management